

HUMAN HEALTH RISK ASSESSMENT UXO 32 – SCRAP YARD

NAVAL SUPPORT FACILITY INDIAN HEAD INDIAN HEAD, MARYLAND

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Naval Facilities Engineering Command Mid-Atlantic
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CONTRACT NO. N62472-03-0-0057 CONTRACT TASK ORDER 47

JUNE 2011

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ACRONYMS AND ABBREVIATIONS

ABS absorption factor

AF adherence factor

AT averaging time

ATSDR Agency for Toxic Substances and Disease Registry

BW body weight

C_{air} concentration of chemical in air

Cal EPA California Environmental Protection Agency

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CF conversion factor

COC chemical of concern

COPC chemical of potential concern

cPAH carcinogenic polycyclic aromatic hydrocarbon

C_s chemical concentration in soil

CSF cancer slope factor

CSM conceptual site model

CTE central tendency exposure

DAF dilution attenuation factor

DAF₁ dilution attenuation factor of 1

DAF₂₀ dilution attenuation factor of 20

EC exposure concentration

EF exposure frequency

ED exposure duration

EPC exposure point concentration

ET exposure time
EU exposure unit

FAQ frequently asked question

FI fraction ingested FS Feasibility Study

HEAST Health Effects Assessment Summary Table

HI hazard index
HQ hazard quotient

HHRA human health risk assessment

IEUBK Integrated Exposure Uptake Biokinetic

ILCR incremental lifetime cancer risk

IR ingestion rate

IRIS Integrated Risk Information System

IUR inhalation unit risk MRL Minimal Risk Level

NCEA National Center for Environmental Assessment

OPPTS Office of Pollution Prevention and Toxics

OSWER Office of Solid Waste and Emergency Response

PAH polycyclic aromatic hydrocarbon

PCB polychlorinated biphenyl **PEF** particulate emission factor

PPRTV Provisional Peer Reviewed Toxicity Value **RAGS** Risk Assessment Guidance for Superfund **RCRA** Resource Conservation and Recovery Act

RDA recommended daily allowance RDI recommended daily intake

RfC reference concentration

RfD reference dose

RME reasonable maximum exposure

RSL Regional Screening Level

SA surface area

SDWA Safe Drinking Water Act

SSL soil screening level

SSLair soil screening level from transfers from soil to air

TEF toxicity equivalence factor **TRW**

Technical Review Workgroup

UCL upper confidence limit

USEPA United States Environmental Protection Agency

UXO unexploded ordnance μg/dL micrograms per deciliter

VF volatilization factor

1.0 INTRODUCTION

The human health risk assessment (HHRA) evaluated whether detected concentrations of chemicals in samples from unexploded ordnance (UXO) 32 pose a significant threat to potential human receptors under current and/or future land uses. Potential risks to human receptors were estimated based on the assumption that no actions are taken to control contaminant releases. The following current guidance and reports published by United States Environmental Protection Agency (USEPA) and USEPA Region 3 were considered in preparing this document:

- Soil Screening Guidance: Technical Background Document, Office of Solid Waste and Emergency Response (OSWER), Washington, D.C., EPA/540/R-95/128 (USEPA, 1996).
- Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER, Washington, D.C., OSWER 9355.4-24 (USEPA, 2002a).
- Exposure Factors Handbook, Office of Health and Environmental Assessment, Washington, D.C., EPA/600/P-95/002Fa (USEPA, 1997a).
- Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors.
 OSWER Directive 9285.6 03, Washington, D.C. (USEPA, 1991).
- Distribution of Preliminary Review Draft: Superfund's Standard Default Exposure-Factors for Central Tendency and Reasonable Maximum Exposure, OSWER, Washington, D.C. (USEPA, 1993).
- Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites,
 Office of Emergency and Remedial Response, Washington, D.C. OSWER 9285.6-10 (USEPA, 2002b).
- Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part A) (USEPA, 1989).
- Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA/540/R/99/005, OSWER 9285.7-02EP; PB99-963312 (USEPA, 2004).

- Guidelines for Carcinogen Risk Assessment, EPA/630/P-03/001B, March 2005 (USEPA, 2005a).
- Supplemental Guidance for Assessing Susceptibility from Early Life Exposure to Carcinogens, EPA/630/R-03/003F (USEPA, 2005b).
- Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment), Final, Office of Superfund Remediation and Technology Innovation, Washington, D.C., EPA-540-R-070-002, OSWER 9285.7-82 (USEPA, 2009a).
- Updated Dermal Exposure Guidance, USEPA Region 3, Philadelphia, Pennsylvania, June 2003 (USEPA Region 3, 2003a).

This HHRA is structured and reported according to the guidelines of the RAGS, Human Health Evaluation Manual, and Part D: Standardized Planning, Reporting, and Review of Superfund Risk Assessments (RAGS Part D) (USEPA, 2001) and consists of the following six components (see Sections 4.1 through 4.6 for detailed discussions):

- Data evaluation
- Exposure assessment
- Toxicity assessment
- Risk characterization
- Uncertainty analysis
- Development of remedial goal options

Three major aspects of chemical contamination and environmental fate and transport must be considered to evaluate potential risks:

- Contaminants with toxic characteristics must be found in environmental media and must be released by either natural processes or human action.
- Potential exposure points must exist.
- Human receptors must be present at the point of exposure.

Risk is a function of both toxicity and exposure. If any one of these factors is absent for a site, the exposure route is incomplete, and no potential risks are considered to exist for human receptors.

2.0 DATA EVALUATION

Data evaluation, the first component of a baseline HHRA, is a medium-specific task involving compilation of analytical data as the first step. The second step and main objective of data evaluation is to develop a medium-specific list of chemicals of potential concern (COPCs) that will be used to quantitatively and/or qualitatively determine potential human health risks for site media. COPCs are selected based on a toxicity screen (i.e., a comparison of site contaminant concentrations to conservative toxicity screening values) and a background screen (i.e., a comparison of site contaminant concentrations to background concentrations). In the COPC selection process for UXO 32, if the results of the background comparison evaluation indicated that UXO 32 chemical concentrations did not exceed background concentrations, that chemical was not selected as a COPC and was not carried through the quantitative risk assessment. However, chemicals present at concentrations exceeding toxicity screening criteria but not selected as COPCs on the basis of background comparison evaluations are further discussed in Section 5.3. Chemicals with maximum concentrations less than the 95% upper tolerance limit from the background datasets for surface and subsurface soil presented in Background Soil Investigation Report for Indian Head and Stump Neck Annex (Tetra Tech, 2002) were considered statistically within background.

2.1 DATA USABILITY

Validated fixed-base analytical results (i.e., results from a fixed-base laboratory) collected during several environmental investigations were used to assess risks to potential human receptors. All data used in the HHRA were validated per Region III data validation guidelines. The samples specifically evaluated in the HHRA are included in tables in Attachment 1.

2.2 SELECTION OF CHEMICALS OF POTENTIAL CONCERN

The selection of COPCs is a qualitative screening process to limit the number of chemicals and exposure routes quantitatively evaluated in the baseline HHRA to those site-related constituents that dominate overall potential risks. Screening by risk-based concentrations focuses the risk assessment on meaningful chemicals and exposure routes. In general, a chemical is selected as a COPC and retained for further quantitative risk evaluation if the maximum detection in a sampled medium exceeds the lowest risk-based screening concentration. Chemicals eliminated from further evaluation are assumed to present minimal risks to potential human receptors. Chemicals were also eliminated from COPC selection if site chemical concentrations were within background concentrations. Medium-specific tables summarizing the selection of COPCs are referenced in the following text.

2.2.1 <u>Derivation of Screening Criteria</u>

The screening criteria used to select COPCs for soil are listed in Table 2-1, and summarized below.

Screening Levels for Soil - Screening levels used to select COPCs for direct human contact exposures to surface and subsurface soil were based on the following criteria:

- Regional Screening Levels (RSLs) for residential soil (USEPA, 2010a)
- Protection of groundwater soil screening levels (SSLs) (USEPA, 2010a)
- Generic Soil Screening Level from Transfers from Soil to Air (SSLs_{air}) (USEPA, 2011)

Chemicals detected at concentrations exceeding the protection of groundwater SSLs but at concentrations less than COPC screening levels for direct contact risk were not evaluated quantitatively in this HHRA but were qualitatively evaluated in Section 2.3.

Screening Levels for Lead - Guidance from the USEPA Office of Pollution Prevention and Toxics (OPPTS) and OSWER recommend 400 mg/kg as the lowest screening level for lead-contaminated soil in a residential setting where children are frequently present (USEPA, 1994). To be conservative, 400 mg/kg was used as the screening level for soil COPC selection. However, guidance from the USEPA Technical Review Workgroup for Lead indicates that "a reasonable screening level for soil lead at commercial/industrial (i.e., non residential) sites is 800 mg/kg" for a typical non-contact-intensive worker (2010b), and this value is also the current USEPA RSL for soil assuming an industrial land use scenario (2010a).

2.2.2 <u>Decision Rules for Establishing COPC</u>

The following decision rules were used to select human health COPCs for UXO 32:

- A chemical detected in soil was selected as a COPC if any detected concentration exceeded the minimum screening level and exceeded background concentrations.
- Essential nutrients were not selected as COPCs. USEPA guidance (1989) states that "Chemicals that are (1) essential human nutrients, (2) present at low concentrations (i.e., only slightly elevated above natural occurring levels), and (3) toxic at very high doses (i.e., much higher than those that could be associated with contact at the site) need not be considered further in the quantitative risk assessment." Examples of such chemicals are magnesium, calcium, potassium, and sodium. Historical information available for UXO 32 indicates that no unusual use or disposal of these constituents occurred at the site. Soil concentrations greater than 1,000,000 mg/kg (i.e., pure mineral

intake) would be required before receptor intake would exceed recommended daily allowance (RDA) and recommended daily intake (RDI) values. A review of current analytical data for UXO 32 indicates that such concentrations have not been detected in environmental media at the site.

- Surrogate COPC screening levels were used for some chemicals. Risk-based COPC screening levels are not available for some chemicals [i.e., acenaphthylene, benzo(g,h,i)perylene, phenanthrene] detected in environmental media at UXO 32 due to the lack of toxicity criteria. In the COPC screening, acenaphthene was used as a surrogate for acenaphthylene, and pyrene was used as a surrogate for benzo(g,h,i)perylene and phenanthrene.
- Concentrations of carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were represented by calculated benzo(a)pyrene equivalents concentrations of these chemicals. For the cPAHs (i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene), a toxicity equivalence factor (TEF) approach was used. TEFs are based on the relative potency of each cPAH compound relative to that of benzo(a)pyrene, and TEFs are used to convert each individual cPAH concentration into an equivalent concentration of benzo(a)pyrene. One-half of the detection limit was used to represent non-detected concentrations in the calculation. If all cPAHs were non-detected in a sample, the sample quantitation limit for benzo(a)pyrene was used as the equivalent concentration for that sample.
- Background data for surface and subsurface soil obtained from Background Soil Investigation Report for Indian Head and Stump Neck Annex (Tetra Tech, 2002). The surface soil data was compared to the 95% upper tolerance limit for surface soil background data set. Two sets of background data were available for subsurface soil: clay-like and non-clay-like. The subsurface soil data was compared to the 95% upper tolerance limit for clay-like subsurface soil background data set because the site soils are clay-like.

Chemicals without COPC screening levels or appropriate surrogate chemical COPC screening levels were evaluated qualitatively considering the number of times the chemical was detected and the magnitudes of the observed concentrations.

2.3 COPCS SELECTED FOR THE HHRA

COPCs at UXO 32 were selected for surface and subsurface soil using the COPC screening levels described in Section 2.2.1. A discussion of the chemicals identified as COPCs and the rationale for their selection as COPCs are provided in the following subsections. COPC selection tables for surface and subsurface soil are presented as Tables 2-2 through 2-5, respectively, and chemicals retained as COPCs

for UXO 32 are presented in Table 2-6. The RAGS Part D tables for COPC selection are included in Attachment 2.

2.3.1 Surface Soil - 0 to 2 Feet Below Grade

Sixteen polycyclic aromatic hydrocarbons (PAHs), one polychlorinated biphenyl (PCB), 14 dioxins/furans (not including total parameters), and eight inorganics were detected in surface soil samples collected at UXO 32. A comparison of maximum detected surface soil concentrations to screening levels (based on RSLs and SSLs_{air}) is presented in Table 2-2. The following chemicals were detected in surface soil at maximum concentrations exceeding the COPC screening levels for direct contact and background concentrations, and were retained as COPCs for surface soil at UXO 32:

- PAHs benzo(a)pyrene and benzo(a)pyrene equivalents.
- PCBs Aroclor-1260.
- Dioxins/Furans 1,2,3,4,7,8-HXCDF, 2,3,4,7,8-PECDF, 2,3,7,8-TCDF, 2,3,7,8-TCDD equivalents.
- Metals arsenic, cadmium, lead, mercury, and zinc.

No concentrations of chemicals exceeding direct contact COPC screening levels were within the range of background concentrations. Therefore, no chemicals were eliminated as COPCs based on site data to background data comparisons.

Also in Table 2-2, maximum detected surface soil concentrations are compared to SSLs_{air} for chemical migration from soil to outdoor air. The concentration of 2,3,7,8-TCDD equivalents exceeded the USEPA SSL_{air} for contaminant migration from soil to air; therefore, receptor exposure through inhalation of fugitive dusts and volatile emissions from surface soil was evaluated. It should be noted that only one surface soil sample was analyzed for dioxins/furans and the calculated 2,3,7,8-TCDD concentration (89.2 ng/kg) for that sample is greater than the current draft EPA recommended interim preliminary remediation goal assuming a residential land use (72 ng/kg) but less than the goal recommended assuming a commercial/industrial land use scenario (950 ng/kg).

A comparison of maximum detected surface soil concentrations to protection of groundwater SSLs is presented in Table 2-3. The following chemicals were detected in surface soil at maximum concentrations exceeding the COPC screening levels for protection of groundwater and background concentrations, and were retained as COPCs for surface soil at UXO 32:

- PAHs benzo(a)pyrene.
- PCBs Aroclor-1260.

- Dioxins/Furans 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HPCDD, 1,2,3,4,6,7,8-HPCDF, 1,2,3,4,7,8,9-HPCDF, 1,2,3,4,7,8-HXCDF, 1,2,3,6,7,8-HXCDD, 1,2,3,6,7,8-HXCDD, 1,2,3,7,8,9-HXCDD, 1,2,3,7,8-PECDF, 2,3,4,6,7,8-HXCDF, 2,3,4,7,8-PECDF, 2,3,7,8-TCDD, 2,3,7,8-TCDD, and 2,3,7,8-TCDD equivalents.
- Inorganics arsenic, cadmium, lead, mercury, and zinc.

No concentrations of chemicals exceeding groundwater protection COPC screening levels were within the range of background concentrations. Therefore, no chemicals were eliminated as COPCs based on site data to background data comparisons. The potential for chemical migration from soil to groundwater is more fully evaluated in Section 5.3.4.

2.3.2 <u>Subsurface Soil - Greater than 2 to 22 Feet Below Grade</u>

Two volatiles, 17 PAHs/SVOCs, seven pesticides, one PCB, 20 metals, and total petroleum hydrocarbons were detected in subsurface soil samples from UXO 32. A comparison of maximum detected subsurface soil concentrations to screening levels (based on USEPA RSLs and USEPA SSLs_{air}) is presented in Table 2-4. The following chemicals were detected in subsurface soil at maximum concentrations exceeding the direct contact risk based COPC screening levels, and were retained as COPCs for subsurface soil at UXO 32:

- PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and benzo(a)pyrene equivalents.
- · Metals arsenic.

The PAH COPCs were detected in, at most, 2 of 22 samples. Concentrations of aluminum, cobalt, iron, manganese, and vanadium exceeded direct contact COPC screening levels, but were within the range of background concentrations. Therefore, aluminum, cobalt, iron, manganese, and vanadium were eliminated as COPCs based on site data to background data comparisons.

Table 2-4 also compares the maximum detected subsurface soil concentrations to SSLs_{air} for chemical migration from soil to air. The maximum detected concentrations of all chemicals detected in subsurface soil were less than the SSLs_{air}. However, because the maximum concentration of one chemical in surface soil exceeded its SSL_{air}, receptor exposure through inhalation of fugitive dusts and volatile emissions from subsurface soil was evaluated as well.

Table 2-5 compares the maximum detected subsurface soil concentrations to protection of groundwater SSLs for chemical migration from soil to groundwater. The following chemicals were detected in

subsurface soil at maximum concentrations exceeding the COPC screening levels for protection of groundwater and were retained as COPCs for subsurface soil at UXO 32:

- PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and naphthalene.
- Pesticides 4,4'-DDE, 4,4'-DDT, and heptachlor epoxide.
- PCBs Aroclor-1260.
- Metals arsenic, cadmium, copper, lead, and nickel.

Concentrations of cobalt, iron, manganese, mercury, and silver in subsurface soil exceeded the groundwater protection screening levels but were within the background levels. A more refined evaluation of the potential for chemical migration from soil to groundwater is provided in Section 5.3.4.

2.3.3 Summary

Table 2-6 summarizes the chemicals retained as COPCs for soil at UXO 32. RAGS Part D tables for COPC selection are included in Attachment 2.

TABLE 2-1

HUMAN HEALTH SCREENING CRITERIA FOR SOIL HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 1 OF 2

USEPA RSL ⁽¹⁾ USEPA SSL ⁽²⁾							
	1		USEPA SSL ⁽²⁾				
Chemical	CAS Number	Adjusted	Protection of Groundwater	Adjusted Soil			
		Residential Soil	SSL	to Air			
DIOXINS/FURANS (NG/KG)							
1,2,3,4,6,7,8,9-OCDD	3268-87-9	15000 C	870	NC			
1,2,3,4,6,7,8,9-OCDF	39001-02-0	15000 C	870	NC			
1,2,3,4,6,7,8-HPCDD	35822-46-9	450 C	26	NC			
1,2,3,4,6,7,8-HPCDF	67562-39-4	450 C	26	NC			
1,2,3,4,7,8,9-HPCDF	55673-89-7	450 C	26	NC NC			
1,2,3,4,7,8-HXCDF	70648-26-9	45 C	2.6	NC			
1,2,3,6,7,8-HXCDD 1,2,3,6,7,8-HXCDF	57653-85-7	45 C	2.6	NC			
1,2,3,7,8,9-HXCDD	57117-44-9	45 C	2.6	NC			
1,2,3,7,6,9-FIXCDD	19408-74-3	45 C	2.6	2540000 C			
2,3,4,6,7,8-HXCDF	57117-41-6 60851-34-5	150 C	8.7	NC NC			
2,3,4,7,8-PECDF	57117-31-4	45 C	2.6	NC			
2,3,7,8-TCDD	1746-01-6	15 C 4.5 C	0.87 0.26	NC 42.C			
2,3,7,8-TCDF	51207-31-9	4.5 C	2.6	42 C NC			
2,3,7,8-TCDD EQUIVALENTS	NA NA	4.5 C	0.26	42 C			
METALS (MG/KG)		4.5 0	0.20	42 0			
ALUMINUM	7429-90-5	7700 N	55000	709000 N			
ARSENIC	7440-38-2	0.39 C	0.0013	769 C			
BARIUM	7440-39-3	1500 N	300	70900 N			
BERYLLIUM	7440-41-7	16 N	58	1380 C			
CADMIUM	7440-43-9	7 N	1.4	1840 C			
CALCIUM	7440-70-2	NC	NC	NC			
CHROMIUM	7440-47-3	12000 N ⁽³⁾	99000000 (3)	276 C			
COBALT	7440-48-4	2.3 N	0.49	1180 C			
COPPER	7440-50-8	310 N	51	NC			
IRON	7439-89-6	5500 N	640	NC			
LEAD	7439-92-1	400	14 ⁽⁴⁾	NC			
MAGNESIUM	7439-95-4	NC NC	NC	NC			
MANGANESE	7439-96-5	180 N	57	7090 N			
MERCURY	7439-97-6	2.3 N ⁽⁵⁾	0.03	NC			
NICKEL	7440-02-0	150 N	48	NC			
POTASSIUM	7440-09-7	NC	NC	NC			
SELENIUM SILVER	7782-49-2	39 N	0.95	NC_			
VANADIUM	7440-22-4	39 N	1.6	NC NC			
ZINC	7440-62-2 7440-66-6	39 N 2300 N	180	NC NC			
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)	7440-00-0	2300 N	680	NC NC			
2-METHYLNAPHTHALENE	91-57-6	31000 N	750	NC 1			
ACENAPHTHYLENE	208-96-8	340000 N ⁽⁶⁾	22000 ⁽⁶⁾	NC NC			
ANTHRACENE	120-12-7	1700000 N	360000	NC NC			
BAP EQUIVALENTS	NA NA	15 C	NC NC	NC NC			
BENZO(A)ANTHRACENE	56-55-3	150 C	10	NC NC			
BENZO(A)PYRENE	50-32-8	15 C	3.5	NC			
BENZO(B)FLUORANTHENE	205-99-2	150 C	35	NC			
BENZO(G,H,I)PERYLENE	191-24-2	170000 N ⁽⁷⁾	120000 (7)	NC			
BENZO(K)FLUORANTHENE	207-08-9	1500 C	350	NC NC			
CARBAZOLE	86-74-8	NC	NC NC	NC NC			
CHRYSENE	218-01-9	15000 C	1100	NC			
DIBENZO(A,H)ANTHRACENE	53-70-3	15 C	11	NC			
DIBENZOFURAN	132-64-9	7800 N	680	NC			
DIETHYL PHTHALATE	84-66-2	4900000 N	12000	NC			
DI-N-BUTYL PHTHALATE	84-74-2	610000 N	9200	NC			
FLUORANTHENE	206-44-0	230000 N	160000	NC			
FLUORENE INDENO(4.2.2.OD)P)(BENE	86-73-7	230000 N	27000	NC			
INDENO(1,2,3-CD)PYRENE	193-39-5	150 C	120	NC			
NAPHTHALENE	91-20-3	3600 C	0.47	17000 N			
PHENANTHRENE	85-01-8	170000 N ⁽⁷⁾	120000 ⁽⁷⁾	NC			
PYRENE	129-00-0	170000 N	120000	NC			

TABLE 2-1

HUMAN HEALTH SCREENING CRITERIA FOR SOIL HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 2 OF 2

		USEPA	RSL ⁽¹⁾	USEPA SSL(2)
Chemical	CAS Number	Adjusted Residential Soil	Protection of Groundwater SSL	Adjusted Soil to Air
VOLATILES (UG/KG)				
ACETONE	67-64-1	6100000 N	4500	NC
CARBON DISULFIDE	75-15-0	82000 N	310	720 SAT
PCBS (UG/KG)				
AROCLOR-1260	11096-82-5	220 C	24	NC
PCBS (UG/KG)			1	
4,4'-DDD	72-54-8	2000 C	66	NC
4.4'-DDE	72-55-9	1400 C	47	NC
4,4'-DDT	50-29-3	1700 C	67	750000 C
ENDOSULFAN II	33213-65-9	37000 N	3000	NC
ENDRIN	72-20-8	1800 N	440	NC
GAMMA-CHLORDANE	5103-74-2	1600 C ⁽⁸⁾	13 (8)	72000 C ⁽⁸⁾
HEPTACHLOR EPOXIDE	1024-57-3	53 C	0.15	4700 C
PETROLEUM HYDROCARBONS (MG/KG)		·		
TOTAL PETROLEUM HYDROCARBONS	NA NA	NC	NC	NC

Footnotes:

- 1 USEPA RSLs for Chemicals at Superfund Sites, November 2010. The noncarcinogenic values (denoted with a "N" flag) are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06 (carcinogens denoted with a "C" flag).
- 2 USEPA Soil Screening Levels (SSLs) available from USEPA Internet Site at http://rais.ornl.gov/epa/ssl1.shtml. The noncarcinogenic values are the screening level divided by 10 to correspond to a target hazard quotient of 0.1. Carcinogenic values represent an incremental cancer risk of 1.0E-06.
- 3 The value is for trivalent chromium.
- 4 Calculated from the USEPA website (http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search).
- 5 The value is for mercuric chloride (and other mercury salts).
- 6 The value for acenaphthene is used as a surrogate.
- 7 The value for pyrene is used as a surrogate.
- 8 The value for chlordane is used as a surrogate.

Definitions:

BAP = Benzo(a)pyrene

C = Carcinogen

CAS = Chemical Abstracts Service

N = Noncarcinogen

NC = No Criteria

NA = Not Available

RSL = Regional Screening Level

SAT = Saturated

SSL = Soil Screening Level

USEPA = United States Environmental Protection Agency

OCCROUNDWATER

CAS Number	Chemical vate		COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁷⁾
	JRANS (NG/KG)		T	T
	1,2,3,4,6,7,8,9-OCDD)	NC NG	YES	ASL
	1,2,3,4,6,7,8,9-OCDF)	NC NC	NO	BSL
	1,2,3,4,6,7,8-HPCDD 3	NC NC	YES	ASL
	1,2,3,4,6,7,8-HPCDF 3	NC NC	YES	ASL
	1,2,3,4,7,8,9-HPCDF }	NC NC	YES	ASL
		NC NC	YES	, ASL
	1,2,3,6,7,8-HXCDD } 1,2,3,6,7,8-HXCDF }	NC NC	YES	ASL
	1,2,3,7,8,9-HXCDD }	NC NC	YES YES	ASL ASL
	1,2,3,7,8-PECDF	NC NC	YES	ASL
	2,3,4,6,7,8-HXCDF	NC	YES	ASL
	2,3,4,7,8-PECDF	NC.	YES	ASL
1746-01-6	2,3,7,8-TCDD }	NC	YES	ASL
	2,3,7,8-TCDF }	NC NC	YES	ASL
NA	2,3,7,8-TCDD EQUIVALENT	NC	YES	ASL
METALS (M		IVC	TES	ASL
7440-38-2	ARSENIC 3	0.026	YES	ASL
7440-39-3	BARIUM)	6000	NO	BSL
7440-43-9	CADMIUM	27	YES	ASL
7440-47-3	CHROMIUM) (5		NO	BSL
7439-92-1	LEAD (1		YES	ASL
7439-97-6	MERCURY	NC	YES	ASL
7782-49-2	SELENIUM 5	19	NO	BSL, BKG
	ZINC	14000	YES	ASL
POLYCYCL	IC AROMATIC HYDROCARB		1	
91-57-6	2-METHYLNAPHTHALENE)	4400	NO	BSL, BKG
208-96-8	ACENAPHTHYLENE) (1	100000	NO	BSL
120-12-7	ANTHRACENE)	470000	NO	BSL, BKG
NA	BAP EQUIVALENTS ⁽⁸⁾	NC	NO	NTX
56-55-3	BENZO(A)ANTHRACENE	480	NO	BKG
50-32-8	BENZO(A)PYRENE	120	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	1500	NO	BKG
191-24-2	BENZO(G,H,I)PERYLENE) (12		NO	BSL, BKG
207-08-9	BENZO(K)FLUORANTHENE)	15000	NO	BSL, BKG
218-01-9	CHRYSÈNE)	48000	NO	BSL, BKG
53-70-3	DIBENZO(A,H)ANTHRACEN	460	NO	BSL
206-44-0	FLUORANTHENE)	6300000	NO	BSL, BKG
86-73-7	FLUORENE)	140000	NO	BSL, BKG
193-39-5	INDENO(1,2,3-CD)PYRENE)	4200	NO	BSL, BKG
91-20-3	NAPHTHALENE	150	NO	BKG
85-01-8	PHENANTHRENE) (12		NO	BSL, BKG

OCCUFOUNDWATER

CAS Number	Chemical	A n of rater	MDE Cleanup Standards for Protection of Groundwater ⁽⁶⁾	COPC Flag	Rational Contamir Deletion Selectio
129-00-0	PYRENE)	680000	NO	BSL, BK
PCBS (UG/					
11096-82-5	ARO CLOR-1260		NC	YES	ASL

Footnotes:

Codes:

- 1 Sample and du plicate are considered as on as a COPC:
- 2 Values presented are sample-specific quove screening level
- 3 The maximum detected concentration is
- 4 95% UTL for surface soil from Backgrountion as a COPC: (Tetra Tech, 20O2) low screening level
- 5 USEPA RSLs for Chemicals at Superfurelow background concentration
- 6 State of Maryla and Department of the Env toxicity criteria
- 7 The chemical is selected as a COPC if the
- 8 Calculated usin g half the value of the det
- 9 The value is for trivalent chromium.
- 10 Calculated from the USEPA website (ht
- 11 The value for acenaphthene is used as
- 12 The value for pyrene is used as a surro

Shaded criterion in clicates that the maximur chemical was retained as a COPC.

Definitions:

BAP = Benzo(a)pyrene

C = Carcinogen

CAS = Chemical Abstracts Service

COPC = Chemical of potential concern

J = Estimated value

NA = Not Available

RSL = Regional Screening Level

SSL = Soil Screening Level

USEPA = United States Environmental Prot

UTL - Upper Tolera nce Limit

		_			
CAS Number	Chemical	Adjusted USEPA RSL Residential ⁽⁶⁾	MDE Cleanup Standards for Residential Soil ⁽⁷⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁸⁾
VOLATILES	(UG/KG)				
67-64-1	ACETONE	6100000 N	7000000	NO	BSL
75-15-0	CARBON DISULFIDE	82000 N	780000	NO	BSL
PCBS (UG/I		·			
	AROCLOR-1260	220 C	320	NO	BSL
PESTICIDE	S/PCBS (UG/KG)			· - · · ·	
72-54-8	4,4'-DDD	2000 C	2700	NO	BSL
72-55-9	4,4'-DDE	1400 C	1900	NO	BSL
50-29-3	4,4'-DDT	1700 C	1900	NO	BSL
33213-65-9	ENDOSULFAN II	37000 N	47000	NO	BSL
72-20-8	ENDRIN	1800 N	2300	NO	BSL
5103-74-2	GAMMA-CHLORDANE	1600 C ⁽¹⁴⁾	1800 (14)	NO	BSL
1024-57-3	HEPTACHLOR EPOXIDE	53 C	70	NO	BSL
PETROLEU	M HYDROCARBONS (MG/KG)		'		
NA	TOTAL PETROLEUM HYDROCARBO	NC	NC	NO	NTX

Footnotes:

- 1 Sample and duplicate are considered as two sepa
- 2 Values presented are sample-specific quantitation
- 3 The maximum detected concentration is used for
- 4 95% UTL for clay-like subsurface soil from Backg
- 5 USEPA Soil Screening Levels (SSLs) available fr are the screening level divided by 10 to correspor
- 6 USEPA RSLs for Chemicals at Superfund Sites, I are the screening level divided by 10 to correspor (carcinogens denoted with a "C" flag).
- 7 State of Maryland Department of the Environment
- 8 The chemical is selected as a COPC if the maxim
- 9 Calculated using half the value of the detection lin
- 10 The value is for trivalent chromium.
- 11 The value is for mercuric chloride (and other me
- 12 The value for acenaphthene is used as a surroga
- 13 The value for pyrene is used as a surrogate.
- 14 The value for chlordane is used as a surrogate.

Shaded criterion indicates that the maximum detected chemical was retained as a COPC.

Definitions:

BAP = Benzo(a)pyrene
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical of potential concern

Rationale Codes:

For selection as a COPC:

ASL = Above screening level

For elimination as a COPC:

BSL = Below screening level

BKG = Below background concentration

NUT = Essential nutrient

NTX = No toxicity criteria

OCCUIGROUNDWATER

CAS Number	·		_			
7429-90-5	4	Chemical	oundwater	Standards for Protection of		Contaminant Deletion or
7440-38-2 ARSENIC 013 0.026 YES ASL 7440-39-3 BARIUM 300 6000 NO BSL, BKG 7440-41-7 BERYLLUM 58 1200 NO BSL, BKG 7440-43-9 CADMIUM 1.4 27 YES ASL 7440-470-2 CALCIUM NC NC NC NO NUT NC NC NO NUT NC NC NO NUT NC NC NO NUT NC NC NO BKG NC NO NUT NC NC NO BKG NC NO BKG NC NO BKG NC NO NUT NC NO NUT NC NC NO NUT NC NC NO NUT NC NC NO NUT N	METALS (M			<u> </u>		
T440-38-2	7429-90-5	<u> </u>	.000	NC	NO	BSL, BKG
T440-39-3 BARIUM 300 6000 NO BSL, BKG 7440-41-7 BERYLLIUM 58 1200 NO BSL BKG 7440-43-9 CADMIUM 14 27 YES ASL 7440-47-3 CHROMIUM NC NC NC NO NUT 7440-47-3 CHROMIUM 000 (®) 2E+09 (®) NO BSL, BKG 7440-50-8 COPPER 51 11000 YES ASL 7439-89-6 IBON 540 NC NO NUT 7439-99-1 LEAD 14 (19) NC YES ASL NC YES ASL NC YES ASL NC YES ASL NC NO NUT 7439-96-5 MANGANESIUM NC NC NO NUT 7440-08-7 NG NO BKG NO NO BKG NO NO BKG NO NO BKG NO NO NUT NC YES ASL NC	7440-38-2			0.026	YES	ASL
T440-41-7 BERYLLIUM	7440-39-3				NO	BSL, BKG
1.4 27 YES ASL 7440-70-2 CALCIUM NC NC NO NUT 7440-47-3 CHROMIUM 000 9 2E+09 9 NO BSL, BKG 7440-48-4 COBALT 0.49 NA NO BKG 7440-48-4 COBALT 0.49 NA NO BKG 7440-48-6 COPPER 51 11000 YES ASL 7439-89-6 IRON 540 NC NO BKG 7439-99-1 LEAD 14 (10) NC YES ASL 7439-99-1 MAGNESIUM NC NC NO NUT 7439-99-5 MANGANESE 57 950 NO BKG 7440-02-0 NICKEL 48 NC YES ASL 7440-02-0 NICKEL 48 NC YES ASL 7440-09-7 POTASSIUM NC NC NO NUT 7782-49-2 SELENIUM 0.95 19 NO BSL, BKG 7440-66-6 ZINC 580 14000 NO BSL 7440-66-6 ZINC 580 14000 NO BSL 85EMIVOLATILES (UG/KG) SELEVICIA STORY 91-57-6 2-METHYLNAPHTHALENE 000 470000 NO BSL 120-12-7 ANTHRACENE 000 470000 NO BSL 80-74-8 CARBAZOLE NC NC NO NTX 56-55-3 BENZO(K)FLUORANTHENE 35 1500 YES ASL 80-74-8 CARBAZOLE NC 470 NO NTX 81-20-99-2 BENZO(K)FLUORANTHENE 350 15000 NO BSL 84-66-2 DIETHYL PHTHALATE 200 5000000 NO BSL 84-66-2 DIETHYL PHTHALATE 200 5000000 NO BSL 85-01-8 PHENANTHENE 000 6300000 NO BSL 85-01-8 PHENANTHENE 000 6300000 NO BSL 85-01-8 PHENANTHENE 000 6200000 NO BSL 85-01-8 PHENANTHENE 000 6200000 NO BSL 85-01-8 PHENANTHENE 000 6300000 NO BSL 85-01-8 PHENANTHENE 000 6300000 NO BSL 85-01-8 PHENANTHENE 000 6200000 NO BSL 85-01-8 PHENAN	7440-41-7				NO	BSL
T440-70-2 CALCIUM					YES	ASL
T440-48-4 COBALT	7440-70-2	CALCIUM		NC	NO	NUT
7440-48-4 COBALT	7440-47-3	CHROMIUM		2E+09 ⁽⁹⁾	NO	BSL, BKG
T440-50-8 COPPER 51	7440-48-4	COBALT				
T439-89-6 IRON	7440-50-8	COPPER				ASL
TASSIVATION	7439-89-6	IRON			NO	BKG
7439-95-4 MAGNESIUM	7439-92-1	LEAD	14 (10)		YES	ASL
7439-96-5 MANGANESE 57 950 NO BKG 7439-97-6 MERCURY 1,03 NC NO BKG 7440-02-0 NICKEL 48 NC YES ASL 7440-09-7 POTASSIUM NC NC NO NUT 7782-49-2 SELENIUM 1,95 19 NO BSL, BKG 7440-22-4 SILVER 1.6 31 NO BKG 7440-62-2 VANADIUM 180 730 NO BSL, BKG 7440-66-6 ZINC 680 14000 NO BSL SEMIVOLATILES (UG/KG)	7439-95-4	MAGNESIUM				
7439-97-6 MERCURY J.03 NC NO BKG 7440-02-0 NICKEL 48 NC YES ASL 7440-09-7 POTASSIUM NC NC NO NUT 7782-49-2 SELENIUM J.95 19 NO BSL, BKG 7440-22-4 SILVER 1.6 31 NO BKG 7440-62-2 VANADIUM 180 730 NO BSL, BKG 7440-66-6 ZINC 680 14000 NO BSL SEMIVOLATILES (UG/KG) 81-57-6 2-METHYLNAPHTHALENE 750 4400 NO BSL 208-96-8 ACENAPHTHYLENE 000 470000 NO BSL 120-12-7 ANTHRACENE 000 470000 NO BSL NA BAP EQUIVALENTS (8) NC NC NO NTX 56-55-3 BENZO (A)ANTHRACENE 10 480 YES ASL 205-99-2 BENZO (B)FLUORANTHENE 35 1500 </td <td>7439-96-5</td> <td>MANGANESE</td> <td></td> <td></td> <td></td> <td></td>	7439-96-5	MANGANESE				
7440-02-0 NICKEL	7439-97-6	MERCURY				ļ
T440-09-7	7440-02-0	NICKEL				
7782-49-2 SELENIUM 7440-22-4 SILVER 7440-62-2 VANADIUM 180 730 NO BSL, BKG 7440-66-6 ZINC 680 14000 NO BSL SEMIVOLATILES (UG/KG) 91-57-6 2-METHYLNAPHTHALENE 208-96-8 ACENAPHTHYLENE 120-12-7 ANTHRACENE NA BAP EQUIVALENTS(B) NC NC NO NTX 56-55-3 BENZO(A)ANTHRACENE 10 480 YES ASL 205-99-2 BENZO(B)FLUORANTHENE 207-08-9 BENZO(B)FLUORANTHENE 35 1500 YES ASL 207-08-9 BENZO(B)FLUORANTHENE 35 1500 YES ASL 208-96-9 DIBENZOFURAN 680 NC NO NTX 218-01-9 CHRYSENE 100 48000 NO BSL 3132-64-9 DIBENZOFURAN 680 NC NO BSL 34-66-2 DIETHYL PHTHALATE 200 500000 NO BSL 34-74-2 DI-N-BUTYL PHTHALATE 200 6300000 NO BSL 35 120 YES ASL 35 1500 YES ASL 36-74-8 CARBAZOLE NC 470 NO NTX 35 132-64-9 DIBENZOFURAN 680 NC NO BSL 34-66-2 DIETHYL PHTHALATE 200 5000000 NO BSL 34-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 39-39-5 INDENO(1,2,3-CD)PYRENE 35 1500 YES ASL	7440-09-7	POTASSIUM				
7440-22-4 SILVER 1.6 31 NO BKG 7440-62-2 VANADIUM 180 730 NO BSL, BKG 7440-66-6 ZINC 680 14000 NO BSL SEMIVOLATILES (UG/KG) 8 000 14000 NO BSL 208-96-8 ACENAPHTHYLENE 000 1100000 NO BSL 120-12-7 ANTHRACENE 000 470000 NO BSL NA BAP EQUIVALENTS (B) NC NC NO NTX 56-55-3 BENZO (A)ANTHRACENE 10 480 YES ASL 205-99-2 BENZO (A)ANTHRACENE 3.5 120 YES ASL 205-99-2 BENZO (B)FLUORANTHENE 3.5 1500 YES ASL 207-08-9 BENZO (K)FLUORANTHENE 350 15000 YES ASL 207-08-9 DENZO (K)FLUORANTHENE 350 15000 YES ASL 218-01-9 CHRYSENE 100 4800	7782-49-2	SELENIUM				
7440-62-2 VANADIUM 180 730 NO BSL, BKG 7440-66-6 ZINC 680 14000 NO BSL SEMIVOLATILES (UG/KG) 91-57-6 2-METHYLNAPHTHALENE 750 4400 NO BSL 208-96-8 ACENAPHTHYLENE 000 1100000 NO BSL 120-12-7 ANTHRACENE 000 470000 NO BSL NA BAP EQUIVALENTS ⁽⁶⁾ NC NC NO NTX 56-55-3 BENZO(A)ANTHRACENE 10 480 YES ASL 205-99-2 BENZO(B)FLUORANTHENE 3.5 120 YES ASL 207-08-9 BENZO(B)FLUORANTHENE 35 1500 YES ASL 207-08-9 BENZO(K)FLUORANTHENE 350 15000 YES ASL 207-08-9 BENZO(K)FLUORANTHENE 350 15000 YES ASL 312-64-9 DIBENZOFURAN 680 NC NO BSL 34-66-2	7440-22-4	SILVER	·			
T440-66-6	7440-62-2	VANADIUM				<u> </u>
SEMIVOLATILES (UG/KG) 91-57-6 2-METHYLNAPHTHALENE 750 4400 NO BSL 208-96-8 ACENAPHTHYLENE 000 (11) 100000 NO BSL 120-12-7 ANTHRACENE 000 470000 NO BSL NA BAP EQUIVALENTS (8) NC NC NO NTX 56-55-3 BENZO (A)ANTHRACENE 10 480 YES ASL 50-32-8 BENZO (A)PYRENE 3.5 120 YES ASL 205-99-2 BENZO (B)FLUORANTHENE 35 1500 YES ASL 207-08-9 BENZO (K)FLUORANTHENE 350 15000 YES ASL 86-74-8 CARBAZOLE NC 470 NO NTX 218-01-9 CHRYSENE 100 48000 NO BSL 132-64-9 DIBENZOFURAN 680 NC NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 000 450000 NO BSL 84-74-2	7440-66-6	ZINC				
208-96-8 ACENAPHTHYLENE 000 100000 NO BSL	SEMIVOLA"	TILES (UG/KG)		14000	<u> </u>	
208-96-8 ACENAPHTHYLENE	91-57-6	2-METHYLNAPHTHALENE	750	4400	NO	BSL
120-12-7 ANTHRACENE	208-96-8	ACENAPHTHYLENE		 		
NA BAP EQUIVALENTS ⁽⁸⁾ NC NC NO NTX 56-55-3 BENZO(A)ANTHRACENE 10 480 YES ASL 50-32-8 BENZO(A)PYRENE 3.5 120 YES ASL 205-99-2 BENZO(B)FLUORANTHENE 35 1500 YES ASL 207-08-9 BENZO(K)FLUORANTHENE 350 15000 YES ASL 86-74-8 CARBAZOLE NC 470 NO NTX 218-01-9 CHRYSENE 100 48000 NO BSL 132-64-9 DIBENZOFURAN 680 NC NO BSL 84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 120 4200 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 85-01-8 PHENANTHRENE 000 (1	120-12-7	ANTHRACENE		<u> </u>		
56-55-3 BENZO(A)ANTHRACENE 10 480 YES ASL 50-32-8 BENZO(A)PYRENE 3.5 120 YES ASL 205-99-2 BENZO(B)FLUORANTHENE 35 1500 YES ASL 207-08-9 BENZO(K)FLUORANTHENE 350 15000 YES ASL 86-74-8 CARBAZOLE NC 470 NO NTX 218-01-9 CHRYSENE 100 48000 NO BSL 132-64-9 DIBENZOFURAN 680 NC NO BSL 84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 129-00-0 PYRENE 470000	NA	BAP EQUIVALENTS(8)				
50-32-8 BENZO(A)PYRENE 3.5 120 YES ASL 205-99-2 BENZO(B)FLUORANTHENE 35 1500 YES ASL 207-08-9 BENZO(K)FLUORANTHENE 350 15000 YES ASL 86-74-8 CARBAZOLE NC 470 NO NTX 218-01-9 CHRYSENE 100 48000 NO BSL 132-64-9 DIBENZOFURAN 680 NC NO BSL 84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL	56-55-3				·	
205-99-2 BENZO(B)FLUORANTHENE 35 1500 YES ASL						
207-08-9 BENZO(K)FLUORANTHENE 350 15000 YES ASL 86-74-8 CARBAZOLE NC 470 NO NTX 218-01-9 CHRYSENE 100 48000 NO BSL 132-64-9 DIBENZOFURAN 680 NC NO BSL 84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE 147 150 YES ASL 85-01-8 PHENANTHRENE 000 120 470000 NO BSL 129-00-0 PYRENE 000 120 470000 NO BSL	205-99-2					
86-74-8 CARBAZOLE NC 470 NO NTX 218-01-9 CHRYSENE 100 48000 NO BSL 132-64-9 DIBENZOFURAN 680 NC NO BSL 84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE AT 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 129-00-0 PYRENE 000 (12) 470000 NO BSL	207-08-9					
218-01-9 CHRYSENE 100 48000 NO BSL 132-64-9 DIBENZOFURAN 680 NC NO BSL 84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 129-00-0 PYRENE 000 (12) 470000 NO BSL	86-74-8					
132-64-9 DIBENZOFURAN 680 NC NO BSL 84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE A7 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 133-00-0 PYRENE 000 (12) 470000 NO BSL						
84-66-2 DIETHYL PHTHALATE 000 450000 NO BSL 84-74-2 DI-N-BUTYL PHTHALATE 200 5000000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 139-00-0 PYRENE 120 470000 NO BSL						
84-74-2 DI-N-BUTYL PHTHALATE 000 430000 NO BSL 206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 139-00-0 PYRENE 000 (12) 470000 NO BSL		<u> </u>				
206-44-0 FLUORANTHENE 000 6300000 NO BSL 193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE A7 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 139-00-0 PYBENE 000 (12) 470000 NO BSL	84-74-2	DI-N-BUTYL PHTHALATE				
193-39-5 INDENO(1,2,3-CD)PYRENE 120 4200 NO BSL 91-20-3 NAPHTHALENE 347 150 YES ASL 85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL 123-00-0 PYBENE NO PSL	206-44-0	FLUORANTHENE				
91-20-3 NAPHTHALENE	193-39-5	INDENO(1,2,3-CD)PYRENE				
85-01-8 PHENANTHRENE 000 (12) 470000 NO BSL	91-20-3	NAPHTHALENE				
120-00-0 PYRENE	85-01-8		000 (12)		 	
		PYRENE	000	680000	NO	BSL

OCCURGROUNDWATER

CAS Number	Chemical	\ Protection oundwater 3SL ⁽⁵⁾	MDE Cleanup Standards for Protection of Groundwater ⁽⁶⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁷⁾
VOLATILES	(UG/KG)				
67-64-1	ACETONE	500	22000	NO	BSL
75-15-0	CARBON DISULFIDE	310	19000	NO	BSL
PCBS (UG/			·		
11096-82-5	AROCLOR-1260	24	NC	YES	ASL
PESTICIDES	S/PCBS (UG/KG)				
72-54-8	4,4'-DDD	66	11000	NO	BSL
72-55-9	4,4'-DDE	47	35000	YES	ASL
50-29-3	4,4'-DDT	67	1200	YES	ASL
33213-65-9	ENDOSULFAN II)00	20000	NO	BSL
72-20-8	ENDRIN	140	5400	NO	BSL
5103-74-2	GAMMA-CHLORDANE	13 ⁽¹³⁾	NC	NO	BSL
1024-57-3	HEPTACHLOR EPOXIDE	.15	25	YES	ASL
PETROLEU	M HYDROCARBONS (MG/KG)		·	· · · · · · · · · · · · · · · · · · ·	
NA	TOTAL PETROLEUM HYDROCAF	RBINC	NC	NO	NTX

Footnotes:

- 1 Sample and duplicate are considered as two se
- 2 Values presented are sample-specific quantitati
- 3 The maximum detected concentration is used f
- 4 95% UTL for clay-like subsurface soil from Bacl, 2002)
- 5 USEPA RSLs for Chemicals at Superfund Sites
- 6 State of Maryland Department of the Environme
- 7 The chemical is selected as a COPC if the max
- 8 Calculated using half the value of the detection
- 9 The value is for trivalent chromium.
- 10 Calculated from the USEPA website (http://epa
- 11 The value for acenaphthene is used as a surro
- 12 The value for pyrene is used as a surrogate.
- 13 The value for chlordane is ussed as a surrogal

Shaded criterion indicates that the maximum detec chemical was retained as a COPC.

Definitions:

J = Estimated value

BAP = Benzo(a)pyrene C = Carcinogen CAS = Chemical Abstracts Service COPC = Chemical of potential concern

Rationale Codes:

For selection as a COPC:

ASL = Above screening level

For elimination as a COPC:

BSL = Below screening level

BKG = Below background concentration

NUT = Essential nutrient

NTX = No toxicity criteria

OCCURGROUNDWATER

CAS Number	Chemical _{i)}	USEPA Protection of Groundwater SSL ⁽⁵⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁶⁾
METALS (M				
7429-90-5	ALUMINUM	55000	NO	BSL, BKG
7440-38-2 7440-39-3	ARSENIC BARIUM	0.0013	YES	ASL
		300	NO	BSL, BKG
7440-41-7 7440-43-9	BERYLLIUM	58	NO	BSL
	CADMIUM CALCIUM	1.4	YES_	ASL
7440-70-2	 -	NC (8)	NO	NUT
7440-47-3	CHROMIUM	99000000 ⁽⁸⁾	NO	BSL, BKG
7440-48-4	COBALT	0.49	NO	BKG
7440-50-8	COPPER	51	YES	ASL
7439-89-6	IRON	640	NO	BKG
7439-92-1	LEAD	14 ⁽⁹⁾	YES	ASL
7439-95-4	MAGNESIUM	NC	NO	NUT
7439-96-5	MANGANESE	57	NO_	BKG
7439-97-6	MERCURY	0.03	NO	BKG
7440-02-0	NICKEL	48	YES	ASL
7440-09-7	POTASSIUM	NC	NO	NUT
7782-49-2	SELENIUM	0.95	NO	BSL, BKG
7440-22-4	SILVER	1.6	NO	BKG
7440-62-2	VANADIUM	180	NO	BSL, BKG
7440-66-6	ZINC	680	NO	BSL
	TILES (UG/KG)			
91-57-6	2-METHYLNAPHTHALENE	750	NO	BSL
208-96-8	ACENAPHTHYLENE	22000 ⁽¹⁰⁾	NO	BSL
120-12-7	ANTHRACENE	360000	NO	BSL
NA	BAP EQUIVALENTS ⁽⁷⁾	NC	NO	NTX
56-55-3	BENZO(A)ANTHRACENE	10	YES	ASL
50-32-8	BENZO(A)PYRENE	3.5	YES	ASL
205-99-2	BENZO(B)FLUORANTHEN	35	YES	ASL
207-08-9	BENZO(K)FLUORANTHEN	350	YES	ASL
86-74-8	CARBAZOLE	NC	NO	NTX
218-01-9	CHRYSENE	1100	NO	BSL
132-64-9	DIBENZOFURAN	680	NO	BSL
84-66-2	DIETHYL PHTHALATE	12000	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	9200	NO	BSL
206-44-0	FLUORANTHENE	160000	NO	BSL
193-39-5	INDENO(1,2,3-CD)PYRENE	120	NO	BSL
91-20-3	NAPHTHALENE	0.47	YES	ASL
85-01-8	PHENANTHRENE	120000 ⁽¹¹⁾	NO	BSL
129-00-0	PYRENE	120000	NO	BSL

OCCURR ROUNDWATER

CAS Number	Chemical ₎	USEPA Protection of Groundwater SSL ⁽⁵⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁶⁾
VOLATILES	(UG/KG)			
67-64-1	ACETONE	4500	NO	BSL
75-15-0 PCBS (UG/F	CARBON DISULFIDE	310	NO	BSL
	AROCLOR-1260	24	YES	ASL
	S/PCBS (UG/KG)	4.4	ILO	I AOL
	4,4'-DDD	66	NO	BSL
72-55-9	4,4'-DDE	47	YES	ASL
50-29-3	4,4'-DDT	67	YES	ASL
33213-65-9	ENDOSULFAN II	3000	NO	BSL
72-20-8	ENDRIN	440	NO	BSL
5103-74-2	GAMMA-CHLORDANE	13 ⁽¹²⁾	NO	BSL
1024-57-3	HEPTACHLOR EPOXIDE	0.15	YES	ASL
PETROLEU	M HYDROCARBONS (MG/K			•
NA	TOTAL PETROLEUM HYDR	NC	NO	NTX

Footnotes:

- 1 Sample and duplicate are considered's
- 2 Values presented are sample-specific
- 3 The maximum detected concentration
- 4 95% UTL for clay-like subsurface soil fetra Tech, 2002)
- 5 USEPA RSLs for Chemicals at Superfu
- 6 The chemical is selected as a COPC if
- 7 Calculated using half the value of the d
- 8 The value is for trivalent chromium.
- 9 Calculated from the USEPA website (h
- 10 The value for acenaphthene is used ε
- 11 The value for pyrene is used as a sur-
- 12 The value for chlordane is used as a:

Shaded criterion indicates that the maximu chemical was retained as a COPC.

Definitions:

BAP = Benzo(a)pyrene
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical of potential concern
J = Estimated value

TABLE 2-6

CHEMICALS RETAINED AS COPCS HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 1 OF 2

Parameter	Surface Soil			Subsurface Soil		
	Direct Contact	Soil to Air	Soil to Groundwater	Direct Contact	Soil to Air	Soil to Groundwater
DIOXINS/FURANS	.1	<u></u>			1	<u> </u>
1,2,3,4,6,7,8,9-OCDD		1	X		T	
1,2,3,4,6,7,8,9-OCDF						
1,2,3,4,6,7,8-HPCDD	-		X			
1,2,3,4,6,7,8-HPCDF		ļ	X		ļ	
1,2,3,4,7,8,9-HPCDF 1,2,3,4,7,8-HXCDF	 		X		ļ	
1,2,3,6,7,8-HXCDD	X	<u> </u>	X		 	
1,2,3,6,7,8-HXCDF	1 .		Î x			
1,2,3,7,8,9-HXCDD	 		X			
1,2,3,7,8-PECDF	 		x		1	
2,3,4,6,7,8-HXCDF			X			
2,3,4,7,8-PECDF	X	·	X			
2,3,7,8-TCDD		L	Х			
2,3,7,8-TCDF	X		X			
2,3,7,8-TCDD EQUIVALENTS	X	X	X		ļ ·	
TOTAL HPCDE	X		X			
TOTAL HPCDF TOTAL HXCDD	<u> </u>	ļ			 	
TOTAL HXCDF	 		 		 	
TOTAL PECDF		-				
TOTAL TCDD	 			 		
TOTAL TCDF				•		
METALS		· · · · · · · · · · · · · · · · · · ·	<u> </u>			
ALUMINUM					I	
ARSENIC	X		X	X		X
BARIUM						
BERYLLIUM	ļ					
CADMIUM CALCIUM	X		X			Х
CHROMIUM	1		1			
COBALT						
COPPER						X
IRON						
LEAD	X		X			X
MAGNESIUM						
MANGANESE						
MERCURY	Х		X			
NICKEL POTASSIUM	ļ					Х
SELENIUM						
SILVER						
VANADIUM	 					
ZINC	X		X			
POLYCYCLIC AROMATIC HYDROCARBONS	·		· · · · · · · · · · · · · · · · · · ·		<u> </u>	
2-METHYLNAPHTHALENE					, , ,	
ACENAPHTHYLENE						
ANTHRACENE						
BAP EQUIVALENT	X			X		
BENZO(A) BYDENIE	 , 			X	<u> </u>	X
BENZO(A)PYRENE BENZO(B)FLUORANTHENE	Х		Х	X		X
BENZO(G,H,I)PERYLENE				X		X
BENZO(K)FLUORANTHENE						χ.
CARBAZOLE						
CHRYSENE						
DIBENZO(A,H)ANTHRACENE						
DIBENZOFURAN						
DIETHYL PHTHALATE						
DI-N-BUTYL PHTHALATE						
FLUORANTHENE						
FLUORENE						
INDENO(1,2,3-CD)PYRENE						
NAPHTHALENE						X
PHENANTHRENE PYRENE		_				
FUNENC		[L	

TABLE 2-6

CHEMICALS RETAINED AS COPCs HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 2 OF 2

Parameter	Surface Soil			Subsurface Soil		
	Direct Contact	Soil to Air	Soil to Groundwater	Direct Contact	Soil to Air	Soil to Groundwater
VOLATILES			 		1 <u> </u>	
ACETONE						1
CARBON DISULFIDE					1	
PCBS			<u> </u>		<u> </u>	<u> </u>
AROCLOR-1260	X		X		1	X
PESTICIDES			<u>' '-</u>			
4,4'-DDD	1					T
4,4'-DDE				•		X
4,4'-DDT						Х
ENDOSULFAN II					i	
ENDRIN						-
GAMMA-CHLORDANE						
HEPTACHLOR EPOXIDE		1				Х
PETROLEUM HYDROCARBONS		·				
TOTAL PETROLEUM HYDROCARBONS					l	

Notes: X - Chemical was retained as a chemical of potential concern (COPC).

3.0 EXPOSURE ASSESSMENT

The exposure assessment phase of the risk assessment defines and evaluates, either quantitatively or qualitatively, the type and magnitude of human exposure to the chemicals present at or migrating from the site. The exposure assessment is designed to depict the physical setting of the site, to identify potentially exposed populations and applicable exposure pathways, to calculate concentrations of COPCs to which receptors might be exposed, and to estimate chemical intakes under the identified exposure scenarios.

Actual or potential exposures at UXO 32 are based on the most likely pathways of contaminant release and transport, as well as on patterns of human activity. A complete exposure pathway has three components: a source of chemicals that can be released to the environment, a route of contaminant transport through an environmental medium, and an exposure or contact point for a human receptor.

3.1 CONCEPTUAL SITE MODEL

A conceptual site model (CSM) facilitates consistent and comprehensive evaluation of potential risks to human health by creating a framework for identifying pathways by which human receptors may come in contact with environmental media contaminated by site activities. A CSM depicts relationships among the following elements, which are necessary to define complete exposure pathways:

- Site sources of contamination
- Contaminant release mechanisms and transport/migration pathways
- Exposure routes
- Potential receptors

The elements of the CSM establish the manner and degree to which a potential receptor may be exposed to chemicals present at the site. The degree of risk incurred by a potential receptor varies according to the means of exposure, duration of exposure, and specific chemical(s) to which the receptor is exposed. An exposure, however long in duration, does not necessarily result in an "unacceptable" health or environmental risk, although risks generally increase with increased frequency and/or duration of exposure.

Section 3.1.1 discusses the identified sources of possible contamination, Section 3.1.2 discusses contaminant release mechanisms and transport and migration pathways, and Section 3.1.3 and Table 3-1 provide site-specific summaries of potential receptors and exposure pathways evaluated for UXO 32. A summary of the exposure routes (addressed quantitatively for each human receptor) is provided in Table 3-2. Figure 3-1 illustrates the CSM for UXO 32.

3.1.1 <u>Site Sources of Contamination</u>

UXO 32 is a fenced scrap yard that is approximately 750 feet long and 100 feet wide. A concrete pad covers a large portion of the site. Potential sources of contamination are electrical transformers and lead batteries stored at the site. The transformers are believed to have leaked and contaminated soil in the northwestern portion of UXO 32. UXO 32 is adjacent to Mattawoman Creek. Runoff from the site flows toward Mattawoman Creek.

3.1.2 <u>Potential Contaminant Release Mechanisms and Transport Pathways</u>

The soil data collected at UXO 32 indicate that past activities have released contaminants to the surrounding environment. Once chemicals have been released to an environmental medium (e.g., soil), they may migrate within that medium or migrate to another environmental medium (e.g., air). This section summarizes potential containment release mechanisms and transport pathways.

Contaminants in surface soil could migrate to air through wind erosion or through volatile emissions. Contaminant migration from surface soil is mitigated by the concrete pad covering surface soil over a portion of the site. Subsurface soil is not currently exposed at the site; however, if future construction occurs and brings subsurface soil to the surface, contaminants in subsurface soil could be transported into the air through wind erosion or through volatile emissions.

Contaminants can migrate from both surface and subsurface soil to groundwater through leaching. Depth to groundwater at UXO 32 is approximately 4 feet bgs. Surface water runoff from UXO 32 flows southwest into Mattawoman Creek.

3.1.3 <u>Potential Current and Future Receptors of Concern and Exposure Pathways</u>

UXO 32 is an active scrap yard surrounded by a fence. Current land use at the site is commercial/industrial and is expected to remain so for the foreseeable future. The facility maintenance workers are the only current receptors potentially contacting environmental media at UXO 32. Therefore, this HHRA focuses on receptor exposure under non residential (e.g., industrial) land use scenarios. Although the site is unlikely to be used for recreation purposes and residential purposes, recreational and residential land uses are also evaluated for purposes of completeness and to add in risk-management decision making.

Under current and potential/hypothetical future land uses, the following potential receptors could be exposed to contaminated environmental media at UXO 32:

- <u>Construction workers</u> Construction workers are plausible on site receptors under current and future land uses. Construction workers could be exposed to chemicals in surface and subsurface soil through incidental ingestion and dermal contact and to airborne contaminants emanating from soil through inhalation.
- Industrial workers Industrial workers are plausible on site receptors under current and future land uses. These receptors could be directly exposed to chemicals in surface soil through incidental ingestion, dermal contact, and inhalation of airborne particulates and to vapors emitted from the soil. Industrial worker exposure to subsurface soil is unlikely; however, because future construction could potentially bring subsurface soil to the surface, exposure to subsurface soil via incidental ingestion, dermal contact, and inhalation was evaluated for this receptor to aid in risk management decisions. This receptor is expected to be exposed to soil equally as often (but less intensely) than the construction worker.
- <u>Future child and adult recreational users</u> Because the anticipated future land use for UXO 32 is not excepted to differ from current uses (i.e., commercial/industrial), a recreational land use scenario is very unlikely. However, hypothetical future recreational users are evaluated to facilitate risk management decisions. It was assumed a recreational user may be exposed to potentially contaminated surface soil through incidental ingestion, dermal contact, and inhalation of chemicals emitted from soil to the air. Because future construction activities could redistribute subsurface soil at the surface, recreational users were evaluated for exposure to subsurface soil to aid in risk management decisions.
- Future child and adult residents Because the anticipated future land use for UXO 32 is not expected to differ from current uses (i.e., commercial/industrial), a residential land use scenario is very unlikely. However, the hypothetical future residential scenario is typically evaluated in a risk assessment to facilitate risk management decisions. It was assumed that a hypothetical resident may be exposed to chemicals in surface soil through ingestion, dermal contact, and inhalation of chemicals emitted from soil to air. Because future construction could potentially redistribute subsurface soil to the surface, residents were also evaluated for risks associated with subsurface soil to aid in risk management decisions.

3.2 CENTRAL TENDENCY EXPOSURE AND REASONABLE MAXIMUM EXPOSURE

Traditionally, exposures evaluated in a HHRA were based on the concept of a reasonable maximum exposure (RME) only, defined as "the maximum exposure that is reasonably expected to occur at a site" (USEPA, 1989). Subsequent risk assessment guidance (USEPA, 1992) stipulates the need to address an average case, or central tendency exposure (CTE). However, in this HHRA, only the RME scenario

was evaluated because the RME scenario is more conservative than the CTE scenario and is typically the basis of risk management decisions.

3.3 EXPOSURE POINT CONCENTRATIONS

The exposure point concentration (EPC), calculated for each COPC only, is an estimate of chemical concentrations in an exposure unit (EU) and is used to estimate exposure intakes. An EU is the area over which receptor activity is expected. The following paragraphs discuss the EUs evaluated in this HHRA and the guidelines for calculating EPCs.

UXO 32 is considered a single EU for soil data. The following guidelines were used to calculate EPCs for the evaluation of COPC concentrations in this EU:

- For soil data sets containing at least five samples, the 95-percent upper confidence limit (UCL) on the arithmetic mean, which is based on the distribution of the data set, was selected as the EPC unless the UCL exceeded the maximum detected concentration. In this case, the maximum detected concentration was used as the EPC. The maximum concentration was also used as the EPC in the event of an insufficient number of detections in a data set (i.e., less than four), in accordance with USEPA guidance (2010c). Using the maximum value is recommended for small data sets because defining the distribution of a data set having fewer than five samples is difficult. EPCs were calculated following USEPA's Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (2002b) and using USEPA's ProUCL Version 4.1.00 (2010c) (see Attachment 3).
- The sample quantitation limit was used for non detects to calculate the 95-percent UCL, in accordance with ProUCL guidance (USEPA, 2010c). Duplicates were averaged to calculate the EPCs for COPCs in environmental media at UXO 32.

EPCs were calculated for 4 datasets:

- Surface soil (current) Surface soil (0-2 ft bgs), currently exposed
- Surface soil (under cap) Soil (0-2 ft bgs), currently under concrete slab
- Surface soil (future) Surface soil currently exposed plus soil (0-2 bgs) under concrete slab
- Subsurface soil Soil (>2-9 ft bgs).

Only subsurface soil with a starting depth of greater than or equal to 5 feet bgs was included in the exposure assessment. Soil samples at greater depths would be completely saturated with groundwater.

Table 3-3 summarizes EPCs used in this HHRA. The RAGS Part D Tables for the EPCs are presented in Attachment 2.

In accordance with USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) Model (1994, 2010d) and their Technical Review Workgroup (TRW) Adult Lead Model (USEPA, 2003b), average lead concentrations were used to estimate blood-lead levels from exposure to lead. This is because the first step in the model calculations is to develop a central estimate of blood-lead concentrations, which requires an "appropriate average concentration" for an individual. Table 3-3 summarizes EPCs used in this HHRA. The RAGS Part D Tables for the EPCs are presented in Attachment 2.

3.4 CHEMICAL INTAKE ESTIMATION

Methodologies and techniques for estimating exposure intakes are presented in this section. Intakes for the identified potential receptor groups were calculated using current USEPA risk assessment guidance and are presented in the risk assessment spreadsheets. Risk assessment results are presented using the USEPA RAGS Part D Table format. Exposure assumptions are presented in Table 3-4.

Non-carcinogenic intakes were estimated using the concept of an average annual exposure, and carcinogenic intakes were calculated as an incremental lifetime exposure, which assumes a life expectancy of 70 years. The exposure assumptions reflect current USEPA guidance. Most of the exposure assumptions used to estimate chemical intakes are based on default assumptions described in several USEPA guidance documents (e.g., 1989, 1991, 1993, 1997a, and 2004). The following paragraphs discuss the non default receptor-specific exposure assumptions used in the risk assessment.

3.4.1 <u>Incidental Ingestion of Soil</u>

Direct physical contact with soil at UXO 32 may result in the incidental ingestion of chemicals. Chemical intake for the incidental ingestion of soil is estimated in the following manner (USEPA, 1989):

Intake =
$$\frac{(C_s)(IR)(FI)(EF)(ED)(CF)}{(BW)(AT)}$$

where:

Intake = chemical intake from soil (mg/kg/day)

C_s = chemical concentration in soil (mg/kg)

IR = ingestion rate (mg/day)

FI = fraction ingested from contaminated source (dimensionless)

EF = exposure frequency (days/year)

ED = exposure duration (year)

CF = conversion factor $(1 \times 10^{-6} \text{ kg/mg})$

BW = body weight (kg)

AT = averaging time (days)

for non-carcinogens, AT = ED×365 days/year

for carcinogens, AT = 70 yr×365 days/year

Most of the exposure assumptions used to estimate chemical intakes from incidental ingestion of soil are based on default assumptions described in standard USEPA guidance. These assumptions are summarized in Table 3-4. The following paragraph briefly discusses the non default receptor-specific exposure assumptions for incidental ingestion of soil used in the HHRA.

The selected exposure frequency assumptions consider anticipated receptor activities at UXO 32. It was assumed that construction workers assigned to future excavation projects at UXO 32 would be exposed to soil for 250 days per year for 1 year. It was also assumed that site recreational users would be exposed to soil an average of 1 day per week, or 52 days per year.

3.4.2 Dermal Contact with Soil

Direct physical contact with soil may result in dermal absorption of chemicals. Exposure associated with dermal contact with soil is estimated as follows (USEPA, 2004):

Intake =
$$\frac{(C_s)(SA)(AF)(ABS)(CF)(EF)(ED)}{(BW)(AT)}$$

where:

Intake = amount of chemical absorbed during contact with soil (mg/kg/day)

C_s = chemical concentration in soil (mg/kg)

SA = skin surface area available for contact (cm²)

AF = skin adherence factor (mg/cm² event)

ABS = absorption factor (dimensionless)

 $CF = conversion factor (1 \times 10^{-6} \text{ kg/mg})$

EF = exposure frequency (days/year)

ED = exposure duration (year)

BW = body weight (kg)

Most of the exposure assumptions used to estimate chemical intakes from dermal contact with soil are based on the default assumptions described in the standard USEPA guidance and are summarized in Table 3-4. The following paragraphs briefly discuss the non default receptor-specific exposure assumptions for dermal contact with soil used in the HHRA.

The same exposure frequencies and durations recommended for evaluating incidental ingestion of soil were used to estimate chemical intakes for dermal contact with soil. The soil adherence factors presented are from Exhibits 3.3 and 3.5 of RAGS Part E.

For chemicals identified as COPCs in soil, the chemical-specific dermal absorption factors in RAGS Part E were used to evaluate the COPCs for soil. USEPA Region 3 dermal guidance (2003a) was consulted if chemical-specific absorption factors were not available in RAGS Part E. Values used in this risk assessment are presented in Table 3-5.

3.4.3 <u>Inhalation of Air Containing Fugitive Dust/Volatiles Emitted from Soil</u>

Intakes of both particulates and vapors/gases are calculated using the same equation, as follows (USEPA, 2009a):

$$EC = \frac{(C_{air})(ET)(EF)(ED)}{AT}$$

where:

EC = exposure concentration (mg/m^3)

 C_{air} = concentration of chemical in air (mg/m³)

ET = exposure time (hours/day)

EF = exposure frequency (days/year)

ED = exposure duration (year)

AT = averaging time (days);

= for non-carcinogens, AT = ED x 365 days/year x 24 hours/day

= for carcinogens, AT = 70 yr x 365 days/year x 24 hours/day

Most of the exposure assumptions used to estimate chemical intakes from inhalation of fugitive dusts/volatile emissions from surface and subsurface soil were based on default assumptions described

in standard USEPA guidance and are summarized in Table 3-4. The same exposure frequencies and durations used to estimate incidental ingestion of soil intakes were used to estimate exposure via inhalation of fugitive dust/volatile emissions for surface and subsurface soil.

The concentrations of chemicals in air resulting from emissions from soil are developed following procedures presented in USEPA Soil Screening Guidance (2002a). Chemical concentrations in air are calculated as follows:

$$C_{ak} = C_{soil} \times \left[\frac{1}{PEF} + \frac{1}{VF} \right]$$

where:

 C_{air} = chemical concentration in air (mg/m³)

C_s = chemical concentration in soil (mg/kg)

PEF = particulate emission factor (m³/kg)

VF = volatilization factor (m³/kg)

No VOCs were identified as COPCs in soil; therefore, the above equation reduces to:

$$C_{air} = C_{soil} \times \frac{1}{PEF}$$

The particulate emissions factor (PEF) relates the concentration of a chemical in soil to the concentration of dust particles in air. A PEF value of 3.23 x 10⁺⁹ m³/kg was obtained from USEPA's Soil Screening Internet site at http://rais.ornl.gov/epa/ssl1.shtml. This is the default value for Philadelphia, Pennsylvania, which is the closest city to Indian Head, Maryland listed on the Internet site. Because air emissions resulting from fugitive dust emissions settings will be different than dust emissions generated during construction activities, a separate PEF was used for construction activities. The PEF for construction workers (1.43 x 10⁺⁶ m³/kg) was calculated using the equations presented in the supplemental SSL guidance document (USEPA, 2002a). Sample PEF calculations were calculated are presented in Attachment 4.

3.4.4 Exposure to Lead

The equations and methodology presented in the previous section cannot be used to evaluate exposure to lead because of the absence of published dose response parameters. Thus, exposure to lead was assessed using the following models:

- USEPA's IEUBK Model for Lead, Version 1.1 Build 11 (2010d). This model is typically used to
 evaluate lead exposure assuming a residential land use scenario.
- USEPA's TRW Model for Lead (2003b and 2009b). This model is typically used to evaluate lead exposure assuming a non residential land use scenario.

The IEUBK model for lead (USEPA, 1994 and 2010d) is designed to estimate blood levels of lead in children under 7 years old based on either default or site specific input values for air, drinking water, diet, dust, and soil exposure. Studies indicate that infants and young children are extremely susceptible to adverse effects from exposure to lead. Considerable behavioral and developmental impairments have been noted in children with elevated blood lead levels. The threshold for toxic effects from this chemical is believed to be in the range of 10 to 15 micrograms per deciliter (μ g/dL). Blood lead levels greater than 10 μ g/dL are considered a "concern."

The IEUBK model for lead was used to address exposure to lead in children when detected soil or sediment concentrations exceeded the OSWER SSL of 400 mg/kg for residential land use (USEPA, 1994). Average chemical concentrations, as well as default parameters for some input parameters, were used in the evaluation. Estimated blood lead levels and probability density histograms are presented to support this analysis and are included in Attachment 5.

Non residential adult exposure to lead in soil was evaluated using USEPA's TRW model for lead (2003b and 2009b). In this model, adult exposure to lead in soil is addressed by evaluating the relationship between lead concentrations in site soil and the blood lead concentrations in the developing fetuses of adult women. The Adult Lead Model generates a spreadsheet for each exposure scenario evaluated (i.e., industrial and recreational). Model outputs are the probabilities that blood lead concentrations in fetuses will exceed 10 μ g/L. These probabilities were calculated in accordance with the following USEPA quidelines:

- Use of the TRW Interim Adult Lead Methodology in Risk Assessment (1999)
- Frequently Asked Questions (FAQs) on the Adult Lead Model (2010b)

No models are currently available to evaluate periodic exposure of child recreational users to lead; therefore, the results of the IEUBK model for children were used to qualitatively assess this receptor's exposure risk. Potential adverse effects from exposure to lead are expected to be of lesser magnitude for child recreational users than for young children based on less frequent exposures.

3.4.5 <u>Summary of Exposure Parameters</u>

Table 3-4 summarizes exposure input parameters for all exposure pathways for identified potential receptor groups at UXO 32. In general, standard default parameters (e.g., USEPA, 1989, 1991, 1997a, 2004), which combine mid range and upper end exposure factors, were used to assess RME conditions. As discussed previously, CTE conditions were not assessed in this HHRA.

SELECTION OF EXPOSURE PATHWAYS HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 1 OF 2

Scenario	Medium	Exposure	Exposure	Receptor	Receptor	Exposure	Type of	Rationale for Selection or Exclusion
Timeframe		Medium	Point	Population	Age	Route	Analysis	of Exposure Pathway
Current/Future	Surface Soil	Surface Soil	UXO 32	Construction	Adult	Ingestion	Quant	
		[Workers	1	Dermal	Quant	Construction workers may have contact with surface soil during excavation activities.
				Industrial	Adult	Ingestion	Quant	
				Workers	.].	Dermal	Quant	Industrial workers may contact surface soil during normal work activities.
Ì		Air		Construction	Adult	Inhalation	Quant	Construction workers may be exposed to fugitive dust and volatile emissions during construction
				Workers		1		activities.
		. 1		Industrial	Adult	Inhalation	Quant	Industrial workers may be exposed to fugitive dust and volatile emissions during normal work
				Workers				activities.
	Subsurface Soil	Subsurface Soil		Construction	Adult	Ingestion	Quant	
		i		Workers	L	Dermal	Quant	Construction workers may have contact with subsurface soil during excavation activities.
		i		Industrial	Adult	Ingestion	Quant	Although exposures to subsurface soil by industrial workers are considered unlikely at the site,
-				Workers		Dermal	Quant	this scenario was included to aid in future risk management decisions.
i		Air		Construction	Adult	Inhalation	Quant	Construction workers may be exposed to fugitive dust and volatile emissions during construction
				Workers				activities.
				Industrial	Adult	Inhalation	Quant	Although exposures to subsurface soil by industrial workers are considered unlikely at the site,
				Workers				this scenario was included to aid in future risk management decisions.
Future	Surface Soil	Surface Soil	UXO 32	Recreational	Child	Ingestion	Quant	
				Users		Dermal	Quant	1
					Adult	Ingestion	Quant	
					L	Dermai	Quant	
				Residents	Child	Ingestion	Quant	
						Dermal	Quant	·
					Adult	Ingestion	Quant	
					<u> </u>	Dermal	Quant	Although a future residential scenario is considered unlikely at the site,
		Air		Recreational	Child	Inhalation	Quant	this scenario was included to aid in future risk management decisions.
				Users				
					Adult	Inhalation	Quant	·
					L			
				Residents	Child	Inhalation	Quant	
					Adult	Inhalation	Quant	
				<u> </u>				

SELECTION OF EXPOSURE PATHWAYS HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 2 OF 2

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
	Subsurface Soil	Subsurface Soil		Recreational	Child	Ingestion	Quant	
				Users		Dermal	Quant	
					Adult	Ingestion	Quant	
						Dermal	Quant	
				Residents	Child	Ingestion	Quant	
						Dermal	Quant	
	į				Adult	ingestion	Quant	
						Dermal	Quant	Although a future residential scenario is considered unlikely at the site,
		Air		Recreational Users	Child	Inhalation	Quant	this scenario was included to aid in future risk management decisions.
					Adult	Inhalation	Quant	
				Residents	Child	Inhalation	Quant	
					Adult	Inhalation	Quant	

Notes:

Quant - Quantitative.

RECEPTORS AND EXPOSURE ROUTES FOR QUANTITATIVE EVALUATION HUMAN HEALTH RISK ASSESSMENT – UXO 32 INDIAN HEAD, MARYLAND

Receptors	Exposure Routes
Construction Workers (current/future land use)	 Soil dermal contact (surface/subsurface) Soil incidental ingestion (surface/subsurface)
Industrial Workers (current/future land use)	 Inhalation of air/dust/emissions (surface/subsurface) Soil dermal contact (surface/subsurface⁽¹⁾) Soil ingestion (surface/subsurface⁽¹⁾) Inhalation of air/dust/emissions (surface/subsurface⁽¹⁾)
Recreational Users (children and adults) (future land use)	 Soil dermal contact (surface/subsurface⁽¹⁾) Soil ingestion (surface/subsurface⁽¹⁾) Inhalation of air/dust/emissions (surface/subsurface⁽¹⁾)
Hypothetical Residents (children and adults) (future land use)	 Soil dermal contact (surface/subsurface⁽¹⁾) Soil ingestion (surface/subsurface⁽¹⁾) Inhalation of air/dust/emissions (surface/subsurface⁽¹⁾)

^{1 –} These receptors are not expected to be exposed to subsurface soil, but exposure to subsurface was evaluated to aid in risk management decisions.

EXPOSURE POINT CONCENTRATIONS HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

Parameter	Surface Soil Current (mg/kg)	Surface Soil Under Cap	Surface Soil Future (mg/kg)	Subsurface Soil (mg/kg)
DIOXINS/FURANS				
2,3,7,8-TCDD EQUIVALENTS	NA	9E-05 ⁽¹⁾	9E-05 ⁽¹⁾	NA *
METALS				
ARSENIC	114 (2)	68.1 ⁽³⁾	143 ⁽⁴⁾	110 ⁽⁵⁾
CADMIUM	1.8 ⁽⁶⁾	69 ⁽¹⁾	13.1 ⁽⁶⁾	NA
LEAD	65.1 ⁽⁷⁾	1672 ⁽⁷⁾	503 ⁽⁷⁾	NA
MERCURY	NA	3.3 ⁽¹⁾	3.3 (1)	NA
ZINC	NA	3500 ⁽¹⁾	3500 ⁽¹⁾	NA
POLYCYCLIC AROMATIC HYDRO	CARBONS			
BAP EQUIVALENT	0.35 (8)	NA	0.36 (8)	0.48 ⁽¹⁾
PCBS			<u>-</u> -	
AROCLOR-1260	0.25 (9)	8 (6)	4.4 (10)	NA

Notes:

NA - Not applicable. Not a COPC for this medium.

- 1 -Maximum detected concentration
- 2 95% Approximate Gamma UCL
- 3 95% Student's-t UCL
- 4 95% H-UCL
- 5 97.5% KM (Chebyshev) UCL
- 6 95% KM (t) UCL
- 7 Arithmetic Mean
- 8 95% KM (BCA) UCL
- 9 95% KM (Chebyshev) UCL
- 10 99% KM (Chebshev) UCL

Risk Assessment Guidance for Superfund (RAGS) Part D tables for the exposure point concentrations and ProUCL printouts are included in Attachment 3.

See ProUCL guidance (USEPA, 2010) for statistics listed above.

SUMMARY OF EXPOSURE INPUT PARAMETERS **HUMAN HEALTH RISK ASSESSMENT - UXO 32** INDIAN HEAD, MARYLAND

			Recreation	onal Users	Future On-Pro	perty Residents
Exposure Parameter	Construction Worker	Industrial Worker	Child	Adult	Child	Adult
All Exposures	L	l	L	<u> </u>	L	
C _{soil} (mg/kg)	Maximum or 95% UCL ⁽¹⁾	Maximum or 95% UCL ⁽¹⁾	Maximum or 95% UCL ⁽¹⁾	Maximum or 95% UCL ⁽¹⁾	Maximum or 95% UCL ⁽¹⁾	Maximum or 95% UCL ⁽¹⁾
ED (years)	1 ⁽²⁾	25 ⁽²⁾	6 ⁽³⁾	24 ⁽³⁾	6 ⁽³⁾	24 ⁽³⁾
BW (kg)	70 ⁽³⁾	70 ⁽³⁾	15 ⁽³⁾	70 ⁽³⁾	15 ⁽³⁾	70 ⁽³⁾
AT _n (days)	ED x 365 ⁽³⁾	ED x 365 ⁽³⁾	ED x 365 ⁽³⁾	ED x 365 ⁽³⁾	ED x 365 ⁽³⁾	ED x 365 ⁽³⁾
AT _c (days)	25,550 ⁽³⁾	25,550 ⁽³⁾	25,550 ⁽³⁾	25,550 ⁽³⁾	25,550 ⁽³⁾	25,550 ⁽³⁾
Incidental Ingestion/Derm	nal Contact with Soi	1	<u> </u>			20,000
IR (mg/day)	330 ⁽²⁾	100 ⁽²⁾	200 ⁽⁴⁾	100 ⁽⁴⁾	200 ⁽⁴⁾	100 ⁽⁴⁾
EF-Soil (days/year)	250 ⁽²⁾	250 ⁽²⁾	52 ⁽⁵⁾	52 ⁽⁵⁾	350 ⁽⁴⁾	350 ⁽⁴⁾
FI (unitless)	1 ⁽²⁾	1 ⁽²⁾	1 ⁽⁴⁾	1 ⁽⁴⁾	1 ⁽⁴⁾	1 ⁽⁴⁾
SA (cm ²)	3,300 ⁽⁶⁾	3,300 ⁽⁶⁾	2,800 ⁽⁶⁾	5700 ⁽⁶⁾	2,800 ⁽⁶⁾	5,700 ⁽⁶⁾
AF (mg/cm ² -event)	0.3 ⁽⁶⁾	0.2 ⁽⁶⁾	0.2 ⁽⁶⁾	0.07 ⁽⁶⁾	0.2 ⁽⁶⁾	0.07 ⁽⁶⁾
EV (events/day)	1 ⁽⁶⁾	1 ⁽⁶⁾	1 ⁽⁶⁾	1 ⁽⁷⁾	1 ⁽⁷⁾	1 ⁽⁷⁾
ABS (unitless)	Chemical Specific	Chemical Specific	Chemical Specific	Chemical Specific	Chemical Specific	Chemical Specific
CF (kg/mg)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06
Inhalation Fugitive Dust/V	olatile Emissions fi	rom Soil		·		<u> </u>
C _{air} (mg/m³)	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated
ET (hours/day)	8 ⁽²⁾	8 ⁽²⁾	4 ⁽⁵⁾	4 ⁽⁵⁾	24 ⁽⁴⁾	24 ⁽⁴⁾
PEF (m³/kg)	1.43E+06 ⁽²⁾	3.23E+09 ⁽⁷⁾	3.23E+09 ⁽⁷⁾	3.23E+09 ⁽⁷⁾	3.23E+09 ⁽⁷⁾	3.23E+09 ⁽⁷⁾

Notes:

ABS Absorption factor

 ${\displaystyle \mathop{\text{AF}}_{\text{c}}}$ Soil-to-skin adherence factor

Averaging time for carcinogenic effects AT_n Averaging time for noncarcinogenic effects

В Bunge Model partitioning coefficient

Body weight BW CF Conversion factor

CR Contact rate

 $C_{\text{soil/air}}$ Exposure concentration for soil/air

ED Exposure duration EF Exposure frequency ΕT Exposure time

ΕV Event frequency

Fi Fraction ingested from contaminated source

IR Ingestion rate

 K_p Permeability coefficient from water through skin

PEF Particulate Emission Factor

Q/C Inverse of mean concentration at the center of the source

SA Skin surface area available for contact

Lag time τ

V

Time it takes to reach steady-state conditions t*

Duration of event

Um Mean annual wind speed

Equivalent threshold of wind velocity at 7 m. Ut

Fraction of vegetative cover

Volatilization Factor

- 1 USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10.
- 2 USEPA, 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.
- 3 USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.
- 4 USEPA, 1991: Risk Assessment Guidance for Superfund Supplemental Guidance- Standard Default Exposure Factors Interim Final.
- 5 Professional judgment, assumed on site for 4 hours per day 1 day per week.
- 6 USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final.
- 7 USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

TABLE 3-5

INTERMEDIATE VARIABLES FOR CALCULATING DA_(EVENT) HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

Chemical of	Medium	Dermal Absorption	FA	F	(_n	T(e	vent)	T:	3U	T	*	В
Potential Concern		Fraction (soil)	Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
Semivolatile Organics						, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	J	Value	Onits	Value	Units	value
BAP Equivalent	Soil	0.13	NA	NA	NA NA	I NA	NA	NA NA	NA	NA	NA	
Dioxins/Furans				I,		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	1	11/7	IVA	I NA	NA	NA_
2,3,7,8-TCDD Equivalents	Soil	0.03	NA	NA	NA	NA.	NA NA	NA	NA	NA	NA	T NA
PCBs			• • • • • • • • • • • • • • • • • • • •			14/3	1	1		INA	I NA	<u>NA</u>
Aroclor-1260	Soil	0.14	NA	NA.	NA	l NA	I NA	NA	NA	NA	N/A	
Inorganics						1. 1973	13/3	I NA		I INA	NA NA	NA ,
Arsenic	Soil	0.03	NA	NA	NA	NA	NA.	NA	NA	NA.	NIA.	r
Cadmium	Soil	0.001	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Lead	Soil	0	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA_
Mercury	Soil	0.001	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA_	NA.
Zinc	Soil	0.001	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA

Notes:

All values from USEPA's Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final, July 2004.

1 - T_(event) is 4 hours for construction workers; 1 hour for hypothetical child residents, and 0.58 hours for hypothetical adult residents.

FA = Fraction absorbed water.

 K_p = Dermal permeability coefficient of compound in water.

 $T_{\text{(event)}} = \text{Event duration}.$

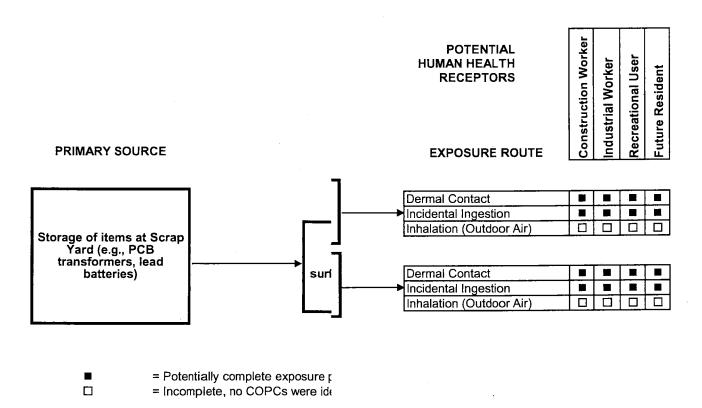
Tau = Lag time.

T* = Time to reach steady state.

B = Dimensionless ratio of the permeability coefficient of a compound through the stratum corneum relative to

its permeability coefficient across the viable epidermis.

NA = Not applicable.



¹ Direct contact with subsurface soil (greater than 2 feete likely unless future construction activities brought subsurface soil to the surface. However, this pathway was evaluate

4.0 TOXICITY ASSESSMENT

The toxicity assessment seeks to identify potential adverse health effects in exposed populations. Quantitative estimates of the relationship between the magnitude and type of exposures and the severity or probability of human health effects are defined for the identified constituents of concern. Quantitative toxicity values determined during this component of the risk assessment are integrated with exposure assessment outputs to characterize the potential occurrence of adverse health effects for each receptor group.

The reference dose (RfD) is the toxicity value used to evaluate non-carcinogenic health effects for ingestion and dermal exposures. The reference concentration (RfC) is used to evaluate non-carcinogenic health effects for inhalation exposures. The RfD and RfC estimate a daily exposure level for a human population that is unlikely to pose an appreciable risk during a portion or all of a human lifetime. It is based on a review of animal and/or human toxicity data, with adjustments for various data uncertainties. Carcinogenic effects are quantified using the cancer slope factor (CSF) for ingestion and dermal exposures and using inhalation unit risks (IURs) for inhalation exposure that are plausible upper bound estimates of the probability of the development of cancer per unit intake of the chemical over a lifetime. These are typically based on dose response data from human and/or animal studies.

4.1 TOXICITY CRITERIA FOR ORAL AND INHALATION EXPOSURES

Oral RfDs and CSFs and inhalation RfCs and IURs used in the UXO 32 risk assessment were obtained from the following primary USEPA literature sources selected per USEPA guidance (2003c):

- Integrated Risk Information System (IRIS).
- USEPA's Provisional Peer Reviewed Toxicity Values (PPRTVs) The Office of Research and Development/National Center for Environmental Assessment (NCEA) Superfund Health Risk Technical Support Center develops chemical specific PPRTVs when requested by USEPA's Superfund program.
- Other toxicity values These sources include, but are not limited to, California Environmental Protection Agency (Cal EPA) toxicity values, Agency for Toxic Substances and Disease Registry (ATSDR) values, and the Annual Health Effects Assessment Summary Tables (HEAST) (USEPA, 1997b).

Although toxicity criteria can be found in several toxicological sources, USEPA's IRIS online database is the preferred source of toxicity values. This database is continuously updated, and its values are verified by USEPA. Toxicity criteria for UXO 32 COPCs are presented in Tables 4-1 through 4-4.

4.2 TOXICITY CRITERIA FOR DERMAL EXPOSURE

RfDs and CSFs in the scientific literature are typically expressed as "administered" (i.e., not absorbed) doses; therefore, these values are considered inappropriate for estimating risks associated with dermal exposures. Oral dose response parameters based on administered doses must be adjusted to absorbed doses before they can be compared to estimated dermal exposure intakes.

When oral absorption is essentially complete (i.e., 100 percent), an absorbed dose is equivalent to the administered dose and therefore no toxicity adjustment is necessary. Conversely, when the gastrointestinal absorption of a chemical is poor (e.g., 1 percent), the absorbed dose is smaller than the administered dose, and toxicity factors based on absorbed dose should be adjusted to account for the difference in the absorbed dose relative to the administered dose. USEPA (2004) recommends a 50-percent absorption cut off to reflect the intrinsic variability in analyzing absorption studies. Therefore, the adjustment from administered to absorbed dose was only performed when the chemical specific gastrointestinal absorption efficiency was less than 50 percent. The adjustment from administered to absorbed dose was made using chemical specific gastrointestinal absorption efficiencies published in numerous sources of guidance (e.g., USEPA 2004 [the primary reference], IRIS, ATSDR toxicological profiles, etc), using the following equations:

$$RfD_{dermal} = (RfD_{oral})(ABS_{GI})$$

 $CSF_{dermal} = (CSF_{oral}) / (ABS_{GI})$

where:

ABS_{GI} = absorption efficiency in the gastrointestinal tract

RfD_{dermal} = reference dose for dermal exposures

RfD_{oral} = reference dose for oral exposures

CSF_{dermal} = cancer slope factor for dermal exposures

CSF_{oral} = cancer slope factor for oral exposures

As noted, the preceding adjustment of the oral toxicity criteria (i.e., RfDs and CSFs) is necessary so that the dermal route of exposure may be quantitatively evaluated in the baseline risk assessment. Further explanation of this procedure and its necessity are presented in Appendix A of USEPA RAGS Part A.

4.3 CHROMIUM TOXICITY

Toxicity criteria are available for different forms of chromium, which is considered more toxic in the hexavalent state. Chromium speciation was not performed for the soil samples collected at UXO 32. Based on the known site history, chromium was not used at the site, and there is no reason to expect hexavalent chromium to be present. Therefore chromium was evaluated as trivalent chromium in this HHRA.

NON-CANCER TOXICITY DATA -- ORAL/DERMAL HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency	Absorbed RfD for Dermal ⁽²⁾		Primary Target	Combined Uncertainty/Modifying	RfD:Target Organ(s)	
		Value	Units	for Dermal ⁽¹⁾	Value	Units	Organ(s)	Factors	Source(s)	Date(s) (MM/DD/YYYY)
Dioxins/Furans										1 (
2,3,7,8-TCDD Equivalents	Chronic	1.0E-09	mg/kg/day	1	1.0E-09	mg/kg/day	NA	NA T	Cal EPA	9/2009
PCBs				·	·	1		_ !	Curtin	3/2003
Aroclor-1260	NA	NA	NA	NA I	NA	NA I	NA	NA I	NA	NA NA
Semivolatile Organic Compoun	ds	-		· · · · · · · · · · · · · · · · · · ·		!			11/2	147
Benzo(a)pyrene Equivalents	NA	NA	NA	NA I	NA	I NA I	NA	NA I	NA NA	NA NA
Inorganics				·					13/5	I INA
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, CVS	3/1	IRIS	3/14/2011
Cadmium	Chronic	1.0E-03	mg/kg/day	0.025	2.5E-05	mg/kg/day	Kidney	10/1	IRIS	3/14/2011
Lead	NA	NA	NA NA	NA NA	NA.	NA NA	NA	NA NA	NA NA	
Mercury ⁽³⁾	Chronic	3.0E-04	mg/kg/day	0.07	2.1E-05	mg/kg/day	Autoimmune	1000/1	IRIS	NA
Zinc	Chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	Blood	3/1	IRIS	3/14/2011 3/14/2011

Notes:

- 1 U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
- 2 Adjusted dermal RfD = Oral RfD x Oral Absorption Efficiency for Dermal.
- 3 Values for mercuric chloride and other mercury salts.

Definitions

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

CVS = Cardiovascular system

IRIS = Integrated Risk Information System

NA = Not Available.

NON-CANCER TOXICITY DATA -- INHALATION HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD ⁽¹⁾		Primary Target	Combined Uncertainty/Modifying	RfC : Target Organ(s)	
		Value	Units	Value	Units	Organ(s)	Factors	Source(s)	Date(s) (MM/DD/YYYY)
Dioxins/Furans									1 (;;;;;==;;;;;)
2,3,7,8-TCDD Equivalents	Chronic	4.0E-08	mg/m3	1.1E-08	(mg/kg/day)	NA	NA NA	Cal EPA	9/2009
PCBs							- 	OaitiA	9/2009
Aroclor-1260	NA	NA	NA	NA	I NA I	NA NA	NA T	NA	NIA.
Semivolatile Organic Compounds				<u> </u>			1	INA	NA NA
Benzo(a)pyrene Equivalents	NA	NA	NA	NA.	NA I	NA	NA I	NA NA	1
Inorganics							I NA	INA	NA NA
Arsenic	Chronic	1.5E-05	mg/m3	4.3E-06	(mg/kg/day)	NA NA	NA I	Cal EPA	0/0000
Cadmium	Chronic	1.0E-05	mg/m3	2.9E-06	(mg/kg/day)	Kidney	9/1	ATSDR	9/2009
Lead	NA NA	NA	NA	NA.	NA NA	NA	 		9/2008
Mercury ⁽²⁾	Chronic	3.0E-05	mg/m ³		 		NA NA	NA	NA NA
Zinc				8.6E-06	(mg/kg/day)	CNS, Kidney	NA NA	Cal EPA	9/2009
ZIIIC	NA_	NA	NA NA	NA	NA	NA	NA.	NA	NA

Notes:

- 1 Extrapolated RfD = RfC *20m³/day / 70 kg
- 2 Values for mercuric chloride and other mercury salts.

Definitions:

ATSDR = Agency for Toxic Substances and Disease Registry.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

CNS = Central Nervous System

NA = Not Applicable

CANCER TOXICITY DATA -- ORAL/DERMAL HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential		Oral Cancer Slope Factor		Absorbed Cancer Slope Factor for Dermai ⁽²⁾		Weight of Evidence/ Cancer Guideline	Oral CSF		
Concern	Value	Units	for Dermal ⁽¹⁾	Value	Units	Description	Source(s)	Date(s) (MM/DD/YYYY)	
Dioxins/Furans					·			(WINDD/TTTT)	
2,3,7,8-TCDD Equivalents	1.30E+05	(mg/kg/day) ⁻¹	1	1.3E+05	(mg/kg/day)-1	B2 / Probable human carcinogen	Cal EPA	9/2009	
PCBs					(mg/mg/dd//		- Our Link	3/2003	
Aroclor-1260	2.00E+00	(mg/kg/day) ⁻¹	1	2.00E+00	(mg/kg/day) ⁻¹	B2 / Probable human carcinogen	USEPA(1)	9/1996	
Semivolatile Organic Compound	ds				T THIS COUNTY		T OOLI MIT	5/ 1990	
Benzo(a)pyrene Equivalents	7.3E+00	(mg/kg/day) ⁻¹	1	7.3E+00	(mg/kg/day) ⁻¹	B2 / Probable human carcinogen	IRIS	3/14/2011	
Inorganics					1 (11110	3/14/2011	
Arsenic	1.5E+00	(mg/kg/day) ⁻¹	1	1.5E+00	(mg/kg/day) ⁻¹	A / Known human carcinogen	IRIS	3/14/2011	
Cadmium	NA .	NA	NA	NA	NA	B1 / Probable human carcinogen	IRIS	3/14/2011	
Lead	NA	NA	NA	NA	NA	B2 / Probable human carcinogen	IRIS	3/14/2011	
Mercury	NA	NA NA	NA	NA	NA	C / Possible human carcinogen	IRIS	3/14/2011	
Zinc	NA	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	3/14/2011	

Notes:

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

USEPA(1) = U.S. EPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

^{1 -} USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.

^{2 -} Adjusted cancer slope factor for dermal = Oral cancer slope factor / Oral absorption efficiency for dermal. Definitions:

CANCER TOXICITY DATA -- INHALATION HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential	Unit	Unit Risk		on Cancer Factor ⁽¹⁾	Weight of Evidence/ Cancer Guideline	Unit Risk : Inhalation CSF		
Concern	Value	Units	Value Units		Description	Source(s)	Date(s) (MM/DD/YYYY)	
Dioxins/Furans							1 (MINISTER 1111)	
2,3,7,8-TCDD Equivalents	3.80E+01	(ug/m ³) ⁻¹	1.3E+05	(mg/kg/day)-1	B2 / Probable human carcinogen	Cal EPA	9/2009	
PCBs							0,2000	
Aroclor-1260	5.7E-04	(ug/m³) ⁻¹	2.0E+00	(mg/kg/day) ⁻¹	B2 / Probable human carcinogen	USEPA(1)	9/1996	
Semivolatile Organic Compound	ls					302171(1)	5/1000	
Benzo(a)pyrene Equivalents	1.1E-03	(ug/m ³) ⁻¹	3.9E+00	(mg/kg/day) ⁻¹	NA	Cal EPA	9/2009	
Inorganics					<u> </u>		572000	
Arsenic	4.3E-03	(ug/m ³) ⁻¹	1.5E+01	(mg/kg/day) ⁻¹	A / Known human carcinogen	IRIS	3/14/2011	
Cadmium	1.8E-03	(ug/m ³) ⁻¹	6.3E+00	(mg/kg/day) ⁻¹	B1 / Probable human carcinogen	IRIS	3/14/2011	
Lead	NA	NA	NA	NA	B2 / Probable human carcinogen	IRIS	3/14/2011	
Mercury	NA	NA	NA	NA	C / Possible human carcinogen	IRIS	3/14/2011	
Zinc	· NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	NA	NA	

Notes:

1 - Inhalation CSF = Unit Risk * 70 kg / 20m3/day.

Definitions:

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009. USEPA(1) = U.S. EPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

5.0 RISK CHARACTERIZATION

This section characterizes the potential human health risks associated with exposures to COPCs at UXO 32. Potential risks (non-carcinogenic and carcinogenic) for human receptors from exposures as outlined in the exposure assessment were quantitatively determined during the risk characterization component of this HHRA. Sections 5.1 and 5.2 outline the methods used to quantitatively estimate the type and magnitude of potential risks to human receptors. Summaries of the risk characterization for UXO 32 are provided in Section 5.3.

5.1 QUANTITATIVE ANALYSIS OF CONSTITUENTS OTHER THAN LEAD

Quantitative estimates of risk for chemicals were calculated according to risk assessment methods outlined in USEPA guidance (1989). Lifetime cancer risks are expressed in the form of dimensionless probabilities referred to as incremental lifetime cancer risks (ILCRs), based on CSFs and IURs. Non-carcinogenic risk estimates are presented in the form of hazard quotients (HQs), which are determined by comparing intakes to published RfDs and RfCs.

ILCR estimates for ingestion and dermal exposures were generated for each COPC using estimated exposure intakes and published CSFs, as follows:

ILCR = (Estimated Exposure Intake)(CSF)

If the equation above results in an ILCR greater than 0.01, the following equation is used:

ILCR = 1-[exp(-Estimated Exposure Intake)(CSF)]

ILCR estimates of inhalation exposures are generated for each COPC using estimated exposure concentrations and published IURs, as follows:

ILCR = (IUR)(Exposure Concentration)(1,000 µg/mg)

An ILCR of 1×10⁻⁶ indicates that the exposed receptor has a one-in-one-million chance of developing cancer under the defined exposure scenario. Alternatively, such a risk may be interpreted as representing one additional case of cancer in an exposed population of one million persons.

Non-carcinogenic risks were assessed using the concepts of HQ and hazard index (HI). The HQ for a COPC is the ratio of the estimated intake to the RfD and is calculated for ingestion and dermal exposures as follows:

HQ = (Estimated Exposure Intake)/(RfD)

For inhalation exposures, the HQ is calculated as follows:

HQ = (Exposure Concentration)/(RfC)

An HI is generated by summing the individual HQs for all COPCs. The HI is not a mathematical prediction of the severity of toxic effects and therefore is not a true "risk"; it is simply a numerical indicator of the possibility of the occurrence of non-carcinogenic (threshold) effects.

5.2 INTERPRETATION OF RISK ASSESSMENT RESULTS

To interpret the quantitative risk estimates and aid risk managers in determining the need for remediation, quantitative risk estimates are compared to typical USEPA risk benchmarks. Calculated ILCRs are interpreted using USEPA's target cancer risk range $(1\times10^{-4} \text{ to } 1\times10^{-6})$, and HIs are evaluated using a value of 1.0. Current USEPA policy regarding lead exposures is to limit the childhood risk of exceeding a 10 µg/dL blood-lead level to 5 percent.

USEPA defines 1×10⁻⁴ to 1×10⁻⁶ as the ILCR target range for hazardous waste facilities addressed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA). Individual or cumulative ILCRs greater than 1×10⁻⁴ are generally considered "unacceptable" by USEPA. Risk management decisions are necessary when the ILCR is within 1×10⁻⁴ to 1×10⁻⁶. USEPA typically does not require remediation when the cumulative ILCR is less than 1×10⁻⁶.

An HI exceeding unity (1.0) indicates that non-carcinogenic health risks may be associated with exposure. If an HI exceeds unity, target organ effects associated with exposure to COPCs are considered. Only those HQs for chemicals affecting the same target organ(s) or exhibiting a similar critical effect(s) are regarded as truly additive. Consequently, the cumulative HI could exceed 1.0, but no adverse health effects would be anticipated unless the COPCs affected the same target organ or exhibited the same critical effect (i.e., unless target organ/critical effect-specific HIs exceeded 1).

As a general guideline, a "no further action" recommendation will be forwarded to USEPA Region 3 whenever the cancer risk estimates and total HIs (estimated on a target organ/target effect basis) for

receptors of concern are less than 1×10⁻⁴ and 1, respectively, and when risks associated with lead exposure are less than the USEPA risk benchmark. Otherwise, in most cases, the need for remedial action (including institutional controls) will be evaluated in a Feasibility Study (FS). However, the 1×10⁻⁴ risk benchmark should not be viewed as a discrete limit. Risks slightly greater than 1×10⁻⁴ may be considered "acceptable" (i.e., protective) if justified by site-specific conditions, including any uncertainties about the nature and extent of contamination and associated risks. Consequently, a "no further action" recommendation may be forwarded to USEPA risk managers for review and discussion when the 1×10⁻⁴ risk benchmark is exceeded. Those reviews and discussions may affect the analyses presented in the FS. The following factors will be considered in this determination:

- The magnitude of the medium-specific risk estimates.
- Significant uncertainties in the baseline HHRA that would overestimate baseline risk assessment results.
- Significant uncertainties in EPC estimates that would overestimate baseline risk assessment results.

5.3 RISK CHARACTERIZATION RESULTS

This section summarizes the risk characterization for UXO 32. Quantitative risk estimates for potential human receptors were developed for chemicals identified as COPCs. Uncertainties associated with these risk estimates are discussed in Section 6.0. The methodology to calculate the risks presented in this section was discussed in Sections 3.0 and 4.0. Potential risks from direct contact exposures to soil are discussed in Sections 5.3.1 and 5.3.2. Potential risks associated with exposures to lead are discussed in Section 5.3.3. A refined evaluation of the potential for chemical migration from soil to groundwater is presented in Section 5.3.4.

Potential cancer risks and HIs were calculated for current and future construction workers, industrial workers, hypothetical recreational users, and hypothetical residents. These calculated potential cancer risks and HIs are summarized in Table 5-1 and Figures 5-1 and 5-2. The worker receptors are the most relevant receptors evaluated in this HHRA because workers are more likely to be present at the site than future recreational users or residents. Risk estimates for hypothetical future recreational users and residents are included primarily for completeness and to support risk management decisions.

Sample calculations are presented in Attachment 4, and the results of the risk assessment in RAGS Part D format are included in Attachment 2. As discussed in Section 2.0, chemicals detected at maximum concentrations exceeding COPC screening levels but within background concentrations were not retained as COPCs and not evaluated in the results of the risk assessment presented in Sections 5.3.1 and 5.3.2. Concentrations of aluminum, cobalt, iron, manganese, and vanadium exceeded direct contact COPC screening levels, but were within the range of background concentrations. Table 5-2 presents the cancer

risks and hazard indices associated with these chemicals. RAGS Part D tables including these chemicals are presented in Attachment 2. Also included in Table 5-2 is a comparison of the cancer risks and HIs for exposures to surface soil and subsurface soil based on site-related COPCs versus risk estimates developed excluding those present at background levels. Eliminating metals within background levels as COPCs for subsurface soil does not change the ILCRs and the receptors with HIs exceeding 1 do not change (see Table 5-2).

5.3.1 Non-Carcinogenic Risks

Cumulative HIs for the construction worker, industrial worker, recreational user, and resident hypothetically exposed to surface soil and subsurface soil at UXO 32 are summarized below. Chemicals contributing to target organ-specific HIs greater than 1.0 (i.e., chemicals of concern [COC]) are listed by environmental medium in Table 5-3. Chemicals are considered primary risk drivers if the cumulative HIs for the environmental medium exceed 1. The primary risk drivers listed in the following table are the predominant COPCs contributing to the medium-specific cumulative risk estimates.

Receptor	Environmental Medium	Hazard Index	Primary Risk Driver
	Surface soil (current)	3 ⁽¹⁾	No COCs ⁽²⁾
Construction	Surface soil (under cap)	3 ⁽¹⁾	No COCs ⁽²⁾
worker	Surface soil (future)	4	Arsenic
	Subsurface soil	2 ⁽¹⁾	No COCs ⁽²⁾
	Surface soil (current)	0.4	No COCs
Industrial	Surface soil (under cap)	0.5	No COCs
worker	Surface soil (future)	0.7	No COCs
	Subsurface soil	0.4	No COCs
OF THE	Surface soil (current)	0.8	No COCs
Child Recreational	Surface soil (under cap)	0.8	No COCs
User	Surface soil (future)	1	No COCs
	Subsurface soil	0.8	No COCs
	Surface soil (current)	0.09	No COCs
Adult Recreational	Surface soil (under cap)	0.09	No COCs
User	Surface soil (future)	0.1	No COCs
	Subsurface soil	0.08	No COCs
	Surface soil (current)	5	Arsenic
Child Resident	Surface soil (under cap)	6	Arsenic
Omid Nesidelli	Surface soil (future)	8	Arsenic
	Subsurface soil	5	Arsenic

Receptor	Environmental Medium	Hazard Index	Primary Risk Driver
	Surface soil (current)	0.6	No COCs
Adult Desident	Surface soil (under cap)	0.6	No COCs
Adult Resident	Surface soil (future)	0.9	No COCs
	Subsurface soil	0.6	No COCs

- 1 The total receptor- or medium-specific HI exceeds 1, but target organ-specific HIs do not exceed 1. (HIs are italicized).
- 2 HIs calculated on a target organ-specific basis do not exceed 1; therefore, no primary risk drivers were identified for this medium
- 3 The total receptor- or medium-specific HI exceeds 1 and target organ-specific HIs exceed 1. (HIs are bolded.)

HIs calculated on a target organ basis for the industrial worker, child recreational user, adult recreational user, and adult resident are less than 1, indicating no adverse non-carcinogenic health effects under the conditions established in the exposure assessment.

HIs for construction workers exposed to COPCs in surface soil (future) and HIs for child residents exposed to COPCs in all media exceed 1 and target organ-specific HIs exceed 1. Arsenic was the major contributor to the elevated HIs.

5.3.2 Carcinogenic Risks

Cancer risk estimates for the hypothetical construction worker, industrial worker, recreational user, and resident hypothetically exposed to surface soil and subsurface soil are summarized in the following table. Chemicals contributing an ILCR greater than 1×10⁻⁶ are listed by environmental medium in Table 5-3. Chemicals are considered primary risk drivers if the cumulative risk estimate for the environmental medium exceeds 1×10⁻⁴. The primary risk drivers in the following table are the predominant COPCs contributing to the medium-specific cancer risk estimates.

Receptor	Environmental Medium	Cancer Risk Estimates	Primary Risk Driver
Construction	Surface soil (current)	1.E-05	No COCs ⁽¹⁾
worker	Surface soil (under cap)	8.E-06	No COCs
	Surface soil (future)	1.E-05	No COCs
	Subsurface soil	1.E-05	No COCs
Industrial	Surface soil (current)	7.E-05	No COCs
worker	Surface soil (under cap)	6.E-05	No COCs
	Surface soil (future)	1.E-04	No COCs
	Subsurface soil	7.E-05	No COCs

Receptor	Environmental Medium	Cancer Risk Estimates	Primary Risk Driver
Lifelong	Surface soil (current)	5.E-05	No COCs
recreational user	Surface soil (under cap)	3.E-05	No COCs
usei	Surface soil (future)	6.E-05	No COCs
	Subsurface soil	5.E-05	No COCs
Lifelong	Surface soil (current)	3.E-04 ⁽²⁾	Arsenic, cPAHs
resident	Surface soil (under cap)	2.E-04	Arsenic, Aroclor-1260, 2,3,7,8-TCDD equivalents
	Surface soil (future)	4.E-04	Arsenic, cPAHs, Aroclor-1260, 2,3,7,8- TCDD equivalents
	Subsurface soil	3.E-04	Arsenic, cPAHs

- 1 ILCRs do not exceed 1×10⁻⁴; therefore, no primary risk drivers were identified for this medium.
- 2 The total receptor- or medium-specific ILCR exceeds 1×10⁻⁴ (ILCRs are bolded).

Cumulative cancer risk estimates for all receptors are less than or within USEPA's target cancer risk range with the exception of lifelong residents. Arsenic, cPAHs, Aroclor-1260, and 2,3,7,8-TCDD equivalents were the major contributors to the elevated ILCRs for exposure of lifelong residents to soil. 2,3,7,8-TCDD equivalents were only analyzed in one surface soil sample.

5.3.3 <u>Lead Risks</u>

Lead was identified as a COPC in surface soil at UXO 32. The maximum detected concentration in surface soil (9800 mg/kg) exceeded the OSWER soil screening level of 400 mg/kg for residential land use.

Hypothetical residential exposures to lead in surface soil were evaluated using USEPA's IEUBK lead model (USEPA, 1994 and 2010d). The most recent version of this model (version 1.1, build 11) was used for the analysis. As recommended in the model's documentation, the average lead concentrations of 65 for surface soil (current), 1672 mg/kg for surface soil (under cap) and 503 mg/kg for surface soil (future) were used as the EPCs. A groundwater concentration was not available; therefore the default value of 4 μg/L was used. Default values were used for the remaining model input parameters. IEUBK model outputs are included in Attachment 5. A young child resident (0 to 6 years of age) is the receptor of concern. The lead concentrations of 65 mg/kg in surface soil (current) and 4 μg/L in groundwater result in 0.002 percent of future on-site child residents having a blood-lead level greater than 10 μg/dL and results in a geometric mean blood-lead level of 1.47 μg/dL. This result is not at variance with the USEPA goal as described in the 1994 OSWER Directive of no more than 5 percent of children exceeding a 10 μg/dL blood-lead level. The lead concentrations of 1672 mg/kg in surface soil (under cap) and 4 μg/L in groundwater result in 71 percent of future on-site child residents having a blood-lead level greater than

10 μ g/dL and results in a geometric mean blood-lead level of 13 μ g/dL. The lead concentrations of 503 mg/kg in surface soil (future) and 4 μ g/L in groundwater result in 8.9 percent of future on-site child residents having a blood-lead level greater than 10 μ g/dL and results in a geometric mean blood-lead level of 5.3 μ g/dL. The results for surface soil (under cap) and surface soil (future) exceed the USEPA goal of no more than 5 percent of children exceeding a 10 μ g/dL blood-lead level.

Risks to construction workers, industrial workers, and adult recreational users exposed to lead in soil were evaluated using a slope factor approach developed by the USEPA TRW for lead (USEPA, 2003b, 2009b). As the model (often referred to as the Adult Lead Model) recommends, average lead concentrations in surface soil were used as the EPCs, and CTE assumptions were used to estimate receptor intake (USEPA, 2003b and 2009b). Based on this information, the incidental soil ingestion rate was assumed to be 100 mg/day for the construction worker and 50 mg/day for industrial workers and adult recreational users (USEPA, 2003b and 2009b). An exposure frequency of 219 days per year was assumed for the construction worker and industrial worker, and an exposure frequency of 52 days per year was assumed for the adult recreational user. Values of 1.8 and 1.0 µg/dL were used for the standard deviation and baseline blood-lead concentration, respectively, (USEPA, 2009b). Default parameters were used for the remaining model input parameters. Results of the model runs are included in Attachment 5.

The fetus of a pregnant worker is the ultimate receptor of concern for the TRW model. Results of the modeling are shown below.

Receptor	Medium	Blood-Lead Geometric Mean Concentration (µg/dL)	Percent of Receptors with Blood-Lead Level Exceeding 10 µg/dL
Construction Workers	Surface Soil (current)	1.2	0.007
*	Surface Soil (under cap)	5.8	13.5
	Surface Soil (future)	2.4	0.50
Industrial Workers	Surface Soil (current)	1.1	0.004
	Surface Soil (under cap)	3.4	2.2
	Surface Soil (future)	1.7	0.076
Adult Recreational Users	Surface Soil (current)	1.0	0.002
	Surface Soil (under cap)	1.6	0.044
	Surface Soil (future)	1.2	0.006

Except for construction workers exposed to surface soil (under cap), the results for construction workers, industrial workers, and adult recreational users are not at variance with the USEPA goal of no more than 5 percent of children (fetuses of exposed women) exceeding a 10 µg/dL blood-lead level.

5.3.4 Refined Evaluation of Chemical Migration from Soil to Groundwater

COPCs for migration from soil to groundwater were selected in Section 2.3. This section presents a more refined evaluation of the potential for such migration based primarily on the following considerations:

- Does the maximum detected soil concentration exceed the risk-based SSL at a dilution attenuation factor (DAF) of 20 (DAF₂₀)?
- · What is the frequency of detection of the chemical?
- Does the maximum detected soil concentration exceed the MCL-based SSL at a DAF₂₀?

These factors were used to select COCs for groundwater protection. Chemicals selected as migration-to-groundwater COPCs in the initial screening were not retained as COCs if any of the following were true:

 The maximum soil concentration is less than the protection of groundwater risk-based SSL calculated using a DAF₂₀.

Rationale: A DAF of 1 (DAF₁) is conservative; a DAF₂₀ is assumed to be more accurate at most sites.

• The frequency of detection is less than 5 percent (when at least 20 samples are included in the data set and no contaminant "hot spot" is present). A hot spot in soil is defined as a concentration that exceeds twice the SSL at a DAF₂₀.

Rationale: Chemicals are unlikely to pose risks to water quality through leaching from soil to groundwater if they are detected infrequently (i.e., in less than 5 percent of samples) in soil.

 The maximum soil concentration is less than the protection of groundwater MCL-based SSL calculated using a DAF₂₀.

Rationale: A DAF₁ is conservative; a DAF₂₀ is assumed to be more accurate at most sites. Additionally, it is unlikely that groundwater would be remediated to concentrations more conservative than federal Safe Drinking Water Act (SDWA) MCLs.

These were the primary considerations guiding the assessment of migration-to-groundwater COPCs.

Migration-to-Groundwater COPCs - Surface Soil - The following chemicals in surface soil were identified as COPCs for migration from surface soil to groundwater:

- PAHs benzo(a)pyrene.
- PCBs Aroclor-1260.
- Dioxins/Furans 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HPCDD, 1,2,3,4,6,7,8-HPCDF, 1,2,3,4,7,8,9-HPCDF, 1,2,3,4,7,8-HXCDF, 1,2,3,6,7,8-HXCDD, 1,2,3,6,7,8-HXCDD, 1,2,3,7,8-HXCDD, 1,2,3,7,8-TCDD, 2,3,4,6,7,8-HXCDF, 2,3,4,6,7,8-HXCDF, 2,3,4,7,8-PECDF, 2,3,7,8-TCDD, 2,3,7,8-TCDD, and 2,3,7,8-TCDD equivalents.
- Inorganics arsenic, cadmium, lead, mercury, and zinc.

Of these COPCs, 1,2,3,4,6,7,8,9-OCDD, 1,2,3,4,6,7,8-HPCDD, 1,2,3,4,6,7,8-HPCDF, 1,2,3,4,7,8,9-HPCDF, 1,2,3,6,7,8-HXCDD, 1,2,3,6,7,8-HXCDD, 1,2,3,7,8-PECDF, 2,3,4,6,7,8-HXCDF, 2,3,7,8-TCDD, and zinc concentrations do not exceed SSLs at a DAF $_{20}$. However, maximum 2,3,7,8-TCDD and benzo(a)pyrene concentrations do not exceed MCL-based SSLs calculated using a DAF $_{20}$, and the detected mercury concentration marginally exceeds its MCL-based SSL calculated using a DAF $_{20}$:

- The MCL-based SSL for 2,3,7,8-TCDD for groundwater protection is 15 ng/kg and 300 ng/kg based on DAF₁ and DAF₂₀, respectively, The maximum detected 2,3,7,8-TCDD concentration (89.2 ng/kg) does not exceed the SSL based on a DAF₂₀.
- The MCL-based SSL for benzo(a)pyrene for groundwater protection is 240 μg/kg and 4,800 μg/kg based on DAF₁ and DAF₂₀, respectively, The maximum detected benzo(a)pyrene concentration (1,200 μg/kg) does not exceed the SSL based on a DAF₂₀.
- The MCL-based SSL for mercury (elemental) for groundwater protection is 0.1 mg/kg and 2 mg/kg based on DAF₁ and DAF₂₀, respectively. The detected mercury concentration (3.3 mg/kg) marginally exceeds the SSL based on a DAF₂₀.

Additionally, Aroclor 1260, cadmium, and lead were not detected in the subsurface soils at concentrations exceeding SSLs based on a DAF₂₀. This suggests limited evidence of migration from surface to subsurface soils. Based on this analysis,, arsenic was selected as a COC for migration from surface soil to groundwater for UXO 32.

Migration to Groundwater COPCs - Subsurface Soil - The following chemicals in subsurface soil were identified as COPCs for migration from subsurface soil to groundwater:

- PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and naphthalene.
- Pesticides 4,4'-DDE, 4,4'-DDT, and heptachlor epoxide.
- PCBs Aroclor-1260.
- Metals arsenic, cadmium, copper, lead, and nickel.

Of these COPCs, benzo(b)fluoranthene, benzo(k)fluoranthene, 4,4'-DDE, 4,4'-DDT, heptachlor epoxide, Aroclor-1260, cadmium, copper, lead, and nickel concentrations do not exceed SSLs at a DAF $_{20}$. Benzo(a)anthracene and naphthalene were detected infrequently (i.e., in less than 5 percent of samples). Additionally, the maximum benzo(a)pyrene concentration (190 μ g/kg) does not exceed MCL-based SSLs calculated using a DAF $_{20}$ (4,800 μ g/kg).

Based on this analysis, arsenic was selected as a COC for migration from subsurface soil to groundwater for UXO 32. However, the subsurface soil samples are mostly saturated soil samples and are likely more representative of groundwater contamination than soil contamination.

SUMMARY OF CANCER RISKS AND HAZARD INDICES HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 1 OF 4

Receptor	Medium	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁻⁵ and ≤ 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁻⁶ and ≤ 10 ⁻⁵	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
onstruction Worker	Surface Soil (current)	Incidental Ingestion	8.E-06			Arsenic	1	
		Dermal Contact	8.E-07				0.1	-
		Inhalation	1.E-06				1	
	l	Total	1.E-05	-		Arsenic	3	Target Organs HI < 1
	Surface Soil (under cap)	Incidental Ingestion	6.E-06			Arsenic	1	Target Organs HI < 1
		Dermal Contact	8.E-07				0.1	Target Organic III - 1
		Inhalation	1.E-06			-	2	Target Organs HI < 1
		Total	8.E-06			Arsenic	3	Target Organs HI < 1
	Surface Soil (future)	Incidental Ingestion	1.E-05			Arsenic	2	Arsenic
		Dermal Contact	1.E-06				0.2	7,4361116
		Inhalation	1.E-06				2	Target Organs HI < 1
		Total	1.E-05			Arsenic	4	Arsenic
	Subsurface Soil	Incidental Ingestion	8.E-06			Arsenic	1	7,1301110
	· ·	Dermal Contact	7.E-07				0.1	
		Inhalation	1.E-06				1	
	1 .	Total	1.E-05			Arsenic	2	Target Organs HI < 1
						- Tracine	L 2	raiget Oigans HI = 1
dustrial Worker	Surface Soil (current)	Incidental Ingestion	6.E-05		Arsenic		0.4	
		Dermal Contact	1.E-05			Arsenic	0.07	-
		Inhalation	1 E-08				0.0005	
		Total	7.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.4	
						2,3,7,8-TCDD Equivalents,		
	Surface Soil (under cap)	Incidental Ingestion	5.E-05		Arsenic	Aroclor-1260	0.4	
	l	Dermal Contact	1.E-05			Arsenic, Aroclor-1260	0.08	
		Inhalation	1.E-08			_	0.0008	
	* .					2,3,7,8-TCDD Equivalents.	0.000	
		Total	6.E-05		Arsenic	Aroclor-1260	0.5	
						2,3,7,8-TCDD Equivalents.		
	Surface Soil (future)	Incidental Ingestion	8.E-05		Arsenic	Aroclor-1260	0.6	<u></u>
		Dermal Contact	2.E-05			Arsenic, Aroclor-1260	0.1	
		Inhalation	2.E-08				0.0008	
						2,3,7,8-TCDD Equivalents,		
		<u> </u> _				Benzo(a)pyrene Equivalents,	,	
	0	Total	1.E-04		Arsenic	Aroclor-1260	0.7	
	Subsurface Soil	Incidental Ingestion	6.E-05	· · · · · · · · · · · · · · · · · · ·	Arsenic		0.4	
	1	Dermal Contact	1.E-05			Arsenic	0.07	
		Inhalation	1.E-08	·			0.0005	
	<u> </u>	Total	7.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.4	

SUMMARY OF CANCER RISKS AND HAZARD INDICES HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 2 OF 4

Receptor Child Recreational User	Medium	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁵ and ≤ 10 ⁴	Chemicals with Cancer Risks > 10 ⁻⁶ and ≤ 10 ⁻⁵	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
fillo Recreational Oser	Surface Soil (current)	Incidental Ingestion	3.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.7	
		Dermal Contact	3.E-06			Arsenic	0.06	
		Inhalation	3.E-10				0.00006	
		Total	3.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.8	
	0					2,3,7,8-TCDD Equivalents,		
	Surface Soil (under cap)	Incidental Ingestion	2.E-05	<u> </u>	Arsenic	Aroclor-1260	0.8	
		Dermal Contact	3.E-06				0.07	
		Inhalation	3.E-10				0.00008	
		_				2,3,7,8-TCDD Equivalents,		
		Total	2.E-05		Arsenic	Aroclor-1260	8.0	
	Surface Soil (future)	la aldonial located				2,3,7,8-TCDD Equivalents,		
	Surface Soil (luture)	Incidental Ingestion Dermal Contact	4.E-05 4.E-06		Arsenic	Benzo(a)pyrene Equivalents	1	
						Arsenic	0.09	
	,	Inhalation	4.E-10				0.00008	
						2,3,7,8-TCDD Equivalents,		
		Total	5.E-05			Benzo(a)pyrene Equivalents,		
	Subsurface Soil	Incidental Ingestion	3.E-05		Arsenic	Aroclor-1260	1	<u> </u>
	Guestinace con	Dermal Contact	3.E-06		Arsenic	Benzo(a)pyrene Equivalents	0.7	
			3.E-00			Arsenic	0.06	
		Inhalation Total				-	0.00005	
		Total	3.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.8	<u></u>
dult Recreational User	Surface Soil (current)	Incidental Ingestion	1.E-05					
	Canaca Can (Carteria)	Dermal Contact	2.E-06			Arsenic	0.08	
		Inhalation	1.E-09	·			0.009	
		Total	1.E-09	-			0.00006	
	Surface Soil (under cap)	Incidental Ingestion	9.E-06		-	Arsenic	0.09	
	Odnace doir (under cap)	Dermal Contact	2.E-06			Arsenic	0.08	
							0.01	
		Inhalation	1.E-09			<u>-</u>	80000.0	<u></u>
	Surface Soil (future)	Total	1.E-05			Arsenic, Aroclor-1260	0.09	
	Surface Suif (luture)	Incidental Ingestion Dermal Contact	2.E-05 2.E-06			Arsenic	0.1	
		Inhalation	2.E-06 2.E-09	··	<u></u>	Arsenic	0.01	
							0.00008	
	Subsurface Soil	Total Incidental Ingestion	2.E-05 1.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.1	<u> </u>
	Guosuriace Sui	Dermal Contact	1.E-05 2.E-06		-	Arsenic	0.07	
					<u></u>		0.009	
	1	Inhalation	1.E-09	<u></u>			0.00005	
		Total	1.E-05			Arsenic	0.08	

SUMMARY OF CANCER RISKS AND HAZARD INDICES HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 3 OF 4

Receptor	Medium	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁻⁵ and ≤ 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁻⁶ and ≤ 10 ⁻⁵	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
felong Recreational User	Surface Soil (current)	Incidental Ingestion	4.E-05		Arsenic	Benzo(a)pyrene Equivalents	NA NA	raiget Organini > 1
		Dermal Contact	5.E-06			Arsenic	NA NA	
		Inhalation	2 E-09				NA NA	
	L	Total	5.E-05		Arsenic	Benzo(a)pyrene Equivalents	NA I	
	Surface Soil (under cap)	Incidental Ingestion	3.E-05	-	Arsenic	2,3,7,8-TCDD Equivalents, Aroclor-1260	NA NA	
		Dermal Contact	4.E-06			Arsenic, Aroclor-1260	NA NA	**
		Inhalation	1.E-09				NA NA	
		Total	3.E-05		Arsenic	2,3,7,8-TCDD Equivalents, Aroclor-1260	NA NA	
	Surface Soil (future)	Incidental Ingestion	6.E-05		Arsenic	2,3,7,8-TCDD Equivalents, Benzo(a)pyrene Equivalents, Aroclor-1260	N/A	
	` ′	Dermal Contact	7.E-06		Alselic	Arsenic	NA NA	
		Inhalation	2.E-09			Al Serie	NA NA	
					***	2,3,7,8-TCDD Equivalents, Benzo(a)pyrene Equivalents,	INA	-
		Total	6.E-05		Arsenic	Aroclor-1260	NA .	
	Subsurface Soil	Incidental Ingestion	4.E-05		Arsenic	Benzo(a)pyrene Equivalents	NA	
		Dermal Contact	5.E-06			Arsenic	NA	
		Inhalation	1.E-09			-	NA	
		Total	5.E-05		Arsenic	Benzo(a)pyrene Equivalents	NA	
	To 4		, , , , , , , , , , , , , , , , , , , 					
nild Resident	Surface Soil (current)	Incidental Ingestion	2.E-04	Arsenic		Benzo(a)pyrene Equivalents	5	Arsenic
		Dermal Contact	2.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.4	
		Inhalation	4.E-09	<u> </u>			0.0007	
		Total	2.E-04	Arsenic	Benzo(a)pyrene Equivalents		5	Arsenic
	Surface Soil (under cap)	Incidental Ingestion	1.E-04		Arsenic, Aroclor-1260	2,3,7,8-TCDD Equivalents	5	Arsenic
		Dermal Contact	2.E-05			Arsenic, Aroclor-1260	0.4	
		Inhalation	3.E-09				0.001	
		Total	2.E-04		Arsenic, Aroclor-1260	2,3,7,8-TCDD Equivalents	6	Arsenic
	Surface Soil (future)	Incidental Ingestion	3 E-04	Arsenic	Benzo(a)pyrene Equivalents	2,3,7,8-TCDD Equivalents, Aroclor-1260	8	Arsenic
		Dermal Contact	3.E-05		Arsenic	Benzo(a)pyrene Equivalents, Aroclor-1260	0.6	
		Inhalation	5.E-09			2,3,7,8-TCDD Equivalents	0.001	
		Total	3.E-04	Arsenic	Benzo(a)pyrene Equivalents	Aroclor-1260	8	Arsenic
	Subsurface Soil	Incidental Ingestion	2.E-04	Arsenic	Benzo(a)pyrene Equivalents		5	Arsenic
		Dermal Contact	2.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.4	**
		Inhalation	4.E-09		-		0.0006	
		Total	2.E-04	Arsenic	Benzo(a)pyrene Equivalents		5	Arsenic

SUMMARY OF CANCER RISKS AND HAZARD INDICES HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 4 OF 4

Receptor	Medium	Exposure Route	Cancer Risk	Chemicals with Cancer Risks > 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁻⁵ and ≤ 10 ⁻⁴	Chemicals with Cancer Risks > 10 ⁻⁶ and ≤ 10 ⁻⁵	Hazard Index	Chemicals Contributing to an Target Organ HI > 1
dult Resident	Surface Soil (current)	Incidental Ingestion	8.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.5	
		Dermal Contact	1 E-05			Arsenic	0.06	
		Inhalation	1.E-08				0.0007	
		Total	9.E-05		Arsenic	Benzo(a)pyrene Equivalents	0.6	
						2,3,7,8-TCDD Equivalents,		
	Surface Soil (under cap)	Incidental Ingestion	6.E-05		Arsenic	Aroclor-1260	0.6	
		Dermal Contact	1.E-05			Arsenic, Aroclor-1260	0.07	
		Inhalation	1.E-08				0.001	
						2,3,7,8-TCDD Equivalents.		
		Total	7.E-05		Arsenic	Aroclor-1260	0.6	
						2,3,7,8-TCDD Equivalents,		
	0 (0 """)				<u> </u>	Benzo(a)pyrene Equivalents,		
	Surface Soil (future)	Incidental Ingestion	1.E-04	_	Arsenic	Aroclor-1260	0.8	
		Dermal Contact	2.E-05			Arsenic, Aroclor-1260	0.1	
		Inhalation	2.E-08				0.001	
i	İ					2,3,7,8-TCDD Equivalents,		
						Benzo(a)pyrene Equivalents,		
	Subsurface Soil	Total	1.E-04		Arsenic	Aroclor-1260	0.9	
	Subsurface Soil	Incidental Ingestion	8.E-05		Arsenic	Benzo(a)pyrene Equivalents Arsenic, Benzo(a)pyrene	0.5	-
		Dermal Contact	1.E-05			Equivalents	0.06	
	1	Inhalation	1.E-08				0.0006	
		Total	9.E-05	-	Arsenic	Benzo(a)pyrene Equivalents	0.6	***
						· · · · · · · · · · · · · · · · · · ·		
elong Resident	Surface Soil (current)	Incidental Ingestion	3.E-04	Arsenic	Benzo(a)pyrene Equivalents		NA	
		Dermal Contact	3.E-05		Arsenic	Benzo(a)pyrene Equivalents	NA	
		Inhalation	2.E-08				NA	
		Total	3.E-04	Arsenic	Benzo(a)pyrene Equivalents		NA	
					2,3,7,8-TCDD Equivalents,			· · · · · · · · · · · · · · · · · · ·
	Surface Soil (under cap)	Incidental Ingestion	2.E-04	Arsenic	Aroclor-1260		NA	
						2,3,7,8-TCDD Equivalents,		
	ļ	Dermal Contact	3.E-05		Arsenic	Aroclor-1260	NA	
		Inhalation	2.E-08				NA	
			1		2,3,7,8-TCDD Equivalents,			
		Total	2.E-04	Arsenic	Aroclor-1260		NA	·
	la (0.1%;)		1		2,3,7,8-TCDD Equivalents,			
	Surface Soil (future)	Incidental Ingestion	4.E-04	Arsenic	Benzo(a)pyrene Equivalents	Aroclor-1260	NA	
			1			2,3,7,8-TCDD Equivalents,		
		Dermal Contact	O-			Benzo(a)pyrene Equivalents.		
		Inhalation	5.E-05		Arsenic	Aroclor-1260	NA NA	
		innaiation	2.E-08				NA	
	, and the second				2,3,7,8-TCDD Equivalents, Benzo(a)pyrene Equivalents,	,		
	4		4.E-04	Arsenic	Aroclor-1260		NA	**
		Total	4.6-04	Alabilio				
	Subsurface Soil	Total Incidental Ingestion	3.E-04	Arsenic	Benzo(a)pyrene Equivalents			
	Subsurface Soil				Benzo(a)pyrene Equivalents Arsenic		NA.	
	Subsurface Soil	Incidental Ingestion	3.E-04	Arsenic		Benzo(a)pyrene Equivalents		

TABLE 5-2

COMPARISON OF CANCER RISKS AND HAZARD INDICES - REASONABLE MAXIMUM EXPOSURES HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

		Cance	er Risks	Hazard	Hazard Indices		
Receptor	Media	Including All Chemicals ⁽¹⁾	Excluding Chemicals Present at Background Levels ⁽²⁾	Including All Chemicals ⁽¹⁾	Excluding Chemicals Present at Background Levels ⁽²⁾		
	10 (4505	4.5.05	3 ⁽³⁾	3 ⁽³⁾		
Construction Workers	Surface soil (current)	1.E-05	1.E-05	-	3 ⁽³⁾		
	Surface soil (under cap)	8.E-06	8.E-06	3			
	Surface soil (future)	1.E-05	1.E-05	4	4		
	Subsurface Soil	1.E-05	1.E-05 ′	3 ⁽³⁾	2 ⁽³⁾		
	T2 :			· · · · · · · · · · · · · · · · · · ·			
Industrial Workers	Surface soil (current)	7.E-05	7.E-05	0.4	0.4		
	Surface soil (under cap)	6.E-05	6.E-05	0.5	0.5		
	Surface soil (future)	1.E-04	1.E-04	0.7	0.7		
	Subsurface Soil	7.E-05	7.E-05	0.5	0.4		
Child Recreational Users	Curface coil (current)	3.E-05	3.E-05	0.8	0.8		
Child Recreational Users	Surface soil (current) Surface soil (under cap)	2.E-05	2.E-05	0.8	0.8		
	Surface soil (future)	5.E-05	5.E-05	1	0.8		
	Subsurface Soil	3.E-05	3.E-05	0.9	0.8		
	Substituce Soil	3.E-03	3.E-03	0.9	0.6		
Adult Recreational Users	Surface soil (current)	1.E-05	1.E-05	0.09	0.09		
Adult Recreational Users	Surface soil (under cap)	1.E-05	1.E-05	0.09	0.09		
	Surface soil (future)	2.E-05	2.E-05	0.1	0.1		
	Subsurface Soil	1.E-05	1.E-05	0.1	0.08		
	Cabsarrace con	1.12.00	1.2.00	0.1	0.00		
Lifelong Recreational Users	Surface soil (current)	5.E-05	5.E-05	NA I	NA		
	Surface soil (under cap)	3.E-05	3.E-05	NA NA	NA		
	Surface soil (future)	6.E-05	6.E-05	NA	NA		
	Subsurface Soil	5.E-05	5.E-05	NA NA	NA		
Child Residents	Surface soil (current)	2.E-04	2.E-04	5	5		
	Surface soil (under cap)	2.E-04	2.E-04	6	6		
	Surface soil (future)	3.E-04	3.E-04	8	8		
	Subsurface Soil	2.E-04	2.E-04	6	5		
Adult Residents	Surface soil (current)	9.E-05	9.E-05	0.6	0.6		
	Surface soil (under cap)	7.E-05	7.E-05	0.6	0.6		
	Surface soil (future)	1.E-04	1.E-04	0.9	0.9		
	Subsurface Soil	9.E-05	9.E-05	0.7	0.6		
Lifelong Residents	Surface soil (current)	3.E-04	3.E-04	NA	NA		
	Surface soil (under cap)	2.E-04	2.E-04	NA	NA		
	Surface soil (future)	4.E-04	4.E-04	NA NA	NA		
	Subsurface Soil	3.E-04	3.E-04	NA	NA		

Notes

- 1 Cancer risk or hazard index from all chemicals detected at concentrations exceeding screening levels.
- 2 Cancer risk or hazard index from only site-related chemicals detected at concentrations exceeding screening levels. Aluminum, cobalt, iron, manganese, and vanadium were within background levels in subsurface soil, and therefore are not considered site-related.
- 3 Hazard index for individual target organs were less than or equal to 1.

NA - Not applicable

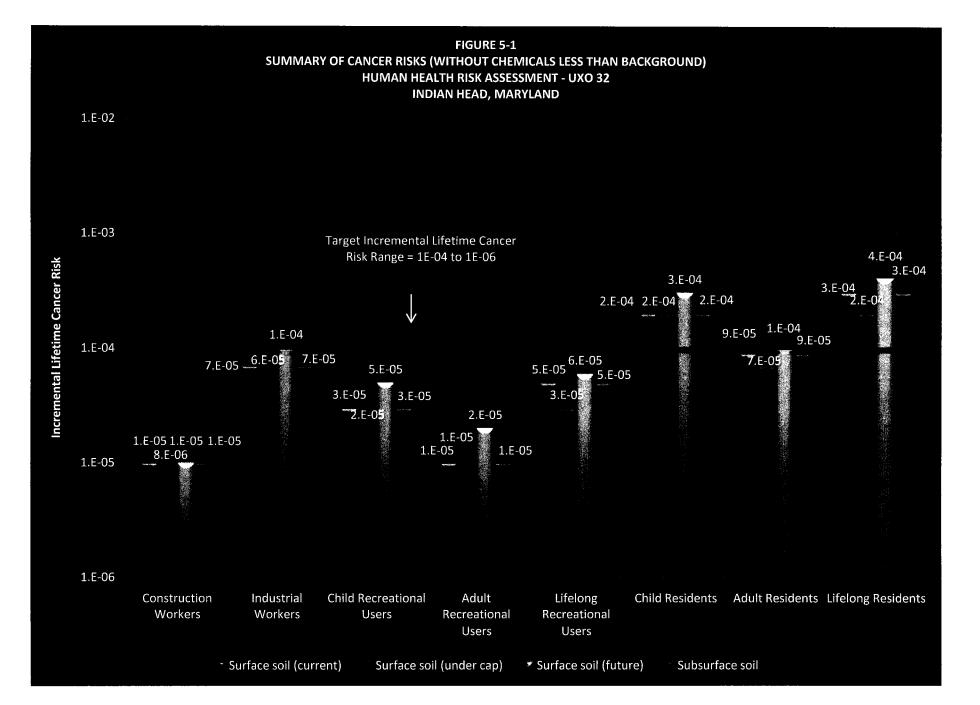
TABLE 5-3

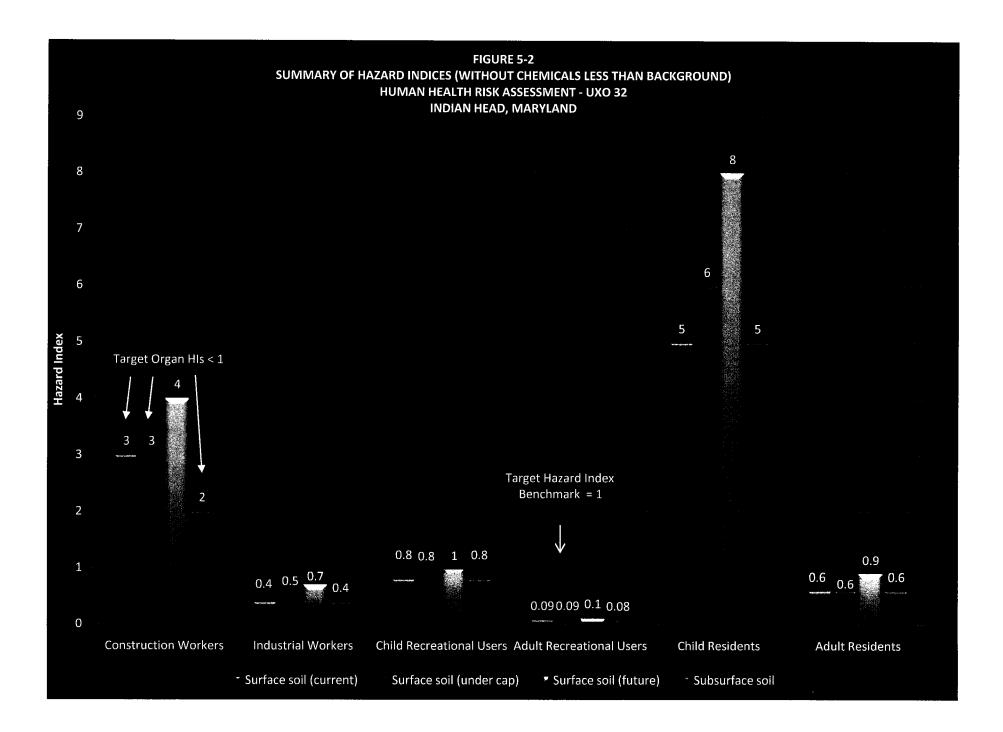
CHEMICALS RETAINED AS COCs FOR DIRECT CONTACT HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

Parameter	Surface soil (current)	Surface soil (under cap)		Subsurface soil
DIOXINS/FURANS				
2,3,7,8-TCDD EQUIVALENTS		X	Х	
METALS				
ARSENIC	X	Х	X	X
POLYCYCLIC AROMATIC HYDROCAR	BONS			
BAP EQUIVALENT	X		X	X
PCBS				·
AROCLOR-1260		Х	Х	

Notes

X - Chemical was retained as a COC for direct contact.





6.0 UNCERTAINTY ANALYSIS

This section presents a summary of uncertainties inherent in the risk assessment and includes a discussion of how they may affect the quantitative risk estimates and conclusions of the risk analysis. The HHRA for UXO 32 was performed in accordance with current USEPA guidance. However, varying degrees of uncertainty are associated with the HHRA. The following sections discuss general uncertainties in risk assessment and uncertainties specific to this risk assessment for UXO 32.

Uncertainty in COPC selection is related to the status of the predictive databases, the grouping of samples, the numbers, types, and distributions of samples, data quality, and the procedures used to include or exclude constituents as COPCs. Uncertainty associated with the exposure assessment includes the values used as input variables for a given intake route or scenario, the assumptions made to determine EPCs, and the predictions regarding future land uses and population characteristics. Uncertainty in the toxicity assessment includes the quality of the existing toxicity data needed to support dose response relationships and the weight of evidence used to determine the carcinogenicity of COPCs. Uncertainty in risk characterization is associated with exposure to multiple chemicals and the cumulative uncertainty from combining conservative assumptions made in earlier steps of the risk assessment.

Whereas various sources of random uncertainty and bias exist, the magnitude of bias and uncertainty and the direction of bias are influenced by the assumptions made throughout the risk assessment, including selection of COPCs and selection of values for dose response relationships. Throughout the risk assessment, assumptions that consider safety factors were made to overestimate the final calculated risks. Generally, risk assessments carry two types of uncertainty, measurement and informational uncertainty. Measurement uncertainty refers to the usual variance that accompanies scientific measurements. For example, this type of uncertainty is associated with the analytical data collected for each site. The risk assessment reflects the accumulated variances of the individual values used. Informational uncertainty stems from inadequate availability of information needed to complete the toxicity and exposure assessments. This gap is often significant, such as the absence of information on the effects of human exposure to low doses of a chemical, the biological mechanism of chemical action, or the behavior of a chemical in soil.

After the risk assessment is complete, the results must be reviewed and evaluated to identify the type and magnitude of uncertainty involved. Relying on risk assessment results without considering the uncertainties, limitations, and assumptions inherent in the process can be misleading. For example, to account for uncertainties in developing exposure assumptions, conservative estimates were made to ensure that the particular assumptions protected sensitive subpopulations or maximally exposed individuals. If a number of conservative assumptions are combined in an exposure model, the resulting

calculations can propagate the uncertainties associated with those assumptions, thereby producing much larger uncertainty in the results. This uncertainty is biased toward over predicting both carcinogenic and non-carcinogenic risks. Thus, both the results of the risk assessment and the uncertainties associated with them must be considered when making risk management decisions.

This interpretation of uncertainty is especially relevant when the risks exceed the point of departure for defining "acceptable" risk. For example, when risks calculated using a high degree of uncertainty are less than an "acceptable" risk level (i.e., 10-6), the interpretation of no significant risk is typically straightforward. However, when risks calculated with a high degree of uncertainty exceed a regulatory acceptable risk level (i.e., 10-4), a conclusion can be difficult unless uncertainty is considered.

6.1 UNCERTAINTY IN COPC SELECTION

The most significant issues related to uncertainty in COPC selection at UXO 32 are the usability of existing databases (only validated data were used in the risk assessment), the COPC screening levels used, the absence of screening levels for a few chemicals detected in site media, and the selection of COPCs using USEPA generic SSLs_{air}. A brief discussion of each of these issues is provided in the remainder of this section.

Usability and Completeness of Existing Databases - As discussed in Section 2.0, data from samples collected during several field investigations were used to assess risks to potential human receptors. These data were validated according to USEPA data validation guidelines. Only fixed base analytical results (i.e., results from a fixed base laboratory, not field analytical results) from the field investigations for the target analyte lists were used in the quantitative risk evaluation. Data regarded as rejected (i.e., qualified as "R" during data validation) were not used in the quantitative risk assessment. Elimination of data qualified as "R" may increase uncertainty in the risk assessment.

COPC Screening Levels - Using risk-based screening values based on conservative land use scenarios (i.e., residential land use for soil) corresponding to ILCRs of 10-6 and HQs of 0.1 ensured that all significant contributors to risk at a site were evaluated. Eliminating chemicals present at concentrations that correspond to ILCRs less than 10-6 and HQs less than 0.1 should not have affected the final conclusions of the risk assessment because those chemicals are not expected to pose potential health concerns at the concentrations detected.

Chemicals without Established Direct Contact Screening Levels - Risk based screening levels are currently not available for some constituents detected at UXO 32. If available, appropriate surrogates were selected for some of these chemicals, based on similar chemical structures. In COPC screening, acenaphthene was used as a surrogate for acenaphthylene, and pyrene was selected as a surrogate for

benzo(g,h,i)perylene and phenanthrene. Applying the toxicity values of one compound to another increases uncertainty in the risk assessment both with regard to COPC selection and the calculated risks. The direction of the uncertainty is unknown.

A large number of constituents do not have SSLs_{air} for the migration from soil to air pathway. This uncertainty is expected to be small because for most chemicals potential risks associated with exposures via inhalation are typically orders of magnitude less than those associated with exposures via incidental ingestion and dermal contact with soil. A comparison of the screening criteria for direct contact exposures with the screening criteria for migration from soil to air shows that, in most cases, the direct contact screening criteria are at least an order of magnitude less than the soil-to-air migration screening criteria for the same compound. Based on the results of these comparisons, if unacceptable risks result from inhalation exposures, unacceptable risks are usually also posed by exposures via the incidental ingestion and dermal contact exposure pathways.

Use of Protection of Groundwater SSLs for Transfers from Soil to Groundwater for COPC Selection - A number of chemicals were selected as COPCs because their maximum concentrations exceeded protection of groundwater SSLs for migration from soil to groundwater assuming a DAF₁. However, USEPA's Soil Screening Guidance (1996) states, "the EPA has selected a default DAF of 20 to account for contaminant dilution and attenuation during transport through the saturated zone to a compliance point (i.e., receptor well). At most sites, this adjustment will more accurately reflect a contaminant's threat to groundwater resources than assuming a DAF of 1 (i.e., no dilution or attenuation)." The guidance further states, "a DAF of 20 is protective for sources up to 0.5 acres in size", and "can be protective of larger sources as well." Consequently, the use of SSLs based on a DAF₁ is very conservative. A more refined evaluation of the potential for chemical migration from soil to groundwater is provided in Section 5.3.4. COCs were recommended for the FS based on that analysis.

6.2 EXPOSURE ASSESSMENT UNCERTAINTY

Uncertainty in the exposure assessment arose because of the methods used to calculate EPCs, determination of land use conditions, selection of receptors and scenarios, and selection of exposure parameters. Each of these is discussed below.

Land Use - Current land use patterns at UXO 32 are well established, thereby limiting the uncertainty associated with land use assumptions. Land use is currently limited to industrial/commercial activities, and the area is expected to remain commercial/industrial in the future. Facility maintenance workers are the only current receptors potentially contacting environmental media at UXO 32. To be conservative,

risks to current and future construction workers, industrial workers, recreational users, and on site residents were evaluated.

Exposure Routes and Receptor Identification - Determination of various receptor groups and exposure routes of potential concern was based on current land use at the site and anticipated future land use. Therefore, uncertainty associated with selecting exposure routes and potential receptors is minimal because these are considered well defined.

Exposure Point Concentrations - Uncertainty is associated with the use of 95-percent UCL on the mean concentrations as EPCs. As a result of using the 95-percent UCL, estimations of potential risk for the RME scenario are most likely overstated because each UCL is a representation of the upper limit that potential receptors would be exposed to over the entire exposure period. In some cases (because data sets had less than five samples, because there were less than four detections, or because the UCL was greater than the maximum concentration), the maximum concentration was used as the EPC. Using the maximum concentration tends to overestimate potential risks because receptors are assumed to be continuously exposed to the maximum concentration for the entire exposure period.

Exposure Parameters - Each exposure factor selected for use in the risk assessment had some associated uncertainty. Exposure factors are generally based on surveys of physiological and lifestyle profiles across the U.S., and the attributes and activities studied in these surveys generally have a broad distribution. To avoid underestimating exposure, in most cases, USEPA guidelines on the RME receptor were used. These generally specify using the 95th percentile value for most parameters. Therefore, the selected values for the RME receptor represent an upper bound of the observed or expected habits of most of the population.

Uncertainty can generally be assessed quantitatively for many assumptions made in determining factors for calculating exposures and intakes. Many of these parameters were determined from statistical analyses of human population characteristics. Often, the database used to derive a particular exposure parameter (e.g., body weight) is relatively large. Consequently, the values chosen for such variables in the RME scenario have low uncertainty.

Many of the exposure parameters used to calculate exposures and risks in this report were selected from a distribution of possible values, including values provided in USEPA guidance (1989, 1991, 1993, 1997a, 2004). For the RME scenario, the value representing the 95th percentile was generally selected for each parameter to ensure that the assessment bounds most actual risks from a postulated exposure. This risk number is used in risk management decisions, but it does not indicate what an average and more-

representative exposure might be, or what risk range might be expected for individuals in the exposed population.

6.3 UNCERTAINTY IN THE TOXICOLOGICAL EVALUATION

Uncertainties associated with the toxicity assessment (determination of RfDs and CSFs and use of available criteria) are presented in this section.

Derivation of Toxicity Criteria - Uncertainty associated with the toxicity assessment is associated with hazard assessment and dose response evaluations for the COPCs. The hazard assessment characterizes the nature and strength of causal evidence or the likelihood that a chemical that induces adverse effects in animals will do likewise in humans. A hazard assessment of carcinogenicity was evaluated as a weight of evidence determination using USEPA methods. Positive animal cancer test data suggest that humans contain tissue(s) that may manifest a carcinogenic response; however, animal data cannot necessarily be used to predict the target tissue in humans. In the hazard assessment of non-carcinogenic effects, however, positive animal data often suggest the nature of the effects (i.e., the target tissues and type of effects) to be anticipated in humans.

Uncertainty in hazard assessment arises from the nature and quality of the animal and human data. Uncertainty is reduced when:

- Similar effects are observed across species, strain, sex, and exposure route.
- The magnitude of the response is clearly dose related.
- Pharmacokinetic data indicate a similar fate in humans and animals.
- Postulated mechanisms of toxicity are similar for humans and animals.
- The COC is structurally similar to other chemicals for which toxicity is more completely characterized.

Uncertainty in the dose response evaluation includes determining a CSF for the carcinogenic assessment and deriving of an RfD for the non-carcinogenic assessment. Uncertainty is introduced from interspecies (animal-to-human) extrapolation, which, in the absence of quantitative pharmacokinetic or mechanistic data, is usually based on consideration of interspecies differences in basal metabolic rate. Uncertainty also results from intraspecies variation. Most toxicity experiments are performed on animals that are very similar in age and genotype, so intragroup biological variation is minimal.

In contrast, the human population of concern may reflect a great deal of heterogeneity, including unusual sensitivity or tolerance to the COPC. Even toxicity data from human occupational exposures reflect a bias because only those individuals sufficiently healthy to regularly attend work (the "healthy worker effect") and those not unusually sensitive to the chemical are likely to be occupationally exposed. Finally,

uncertainty arises from the quality of the key study from which the quantitative estimate is derived and the database used. For cancer effects, the uncertainty associated with dose response factors was mitigated by assuming the 95-percent upper bound for the slope factor. Another source of uncertainty in carcinogenic assessment is the method by which data from high doses in animal studies are extrapolated to the dose range expected for environmentally exposed humans. The linearized multi stage model, which is used in nearly all quantitative estimations of human risk based on animal data, is based on a non-threshold assumption of carcinogenesis. Evidence suggests, however, that epigenetic carcinogens, as well as many genotoxic carcinogens, have a threshold below which they are non-carcinogenic. Therefore, using the linearized multi stage model was conservative for chemicals that exhibited a threshold for carcinogenicity.

For non-carcinogenic effects, additional uncertainty factors may have been applied to derive the RfD to mitigate poor quality of the key study or gaps in the database. Additional uncertainty for non-carcinogenic effects arose from using an effect level in the estimate of an RfD because this estimate was predicated on the assumption of a threshold less than which adverse effects were not expected. Therefore, an uncertainty factor is usually applied to estimate a no effect level.

Additional uncertainty arose in estimating an RfD for chronic exposure from subchronic data. Unless empirical data indicated that effects did not worsen with increasing duration of exposure, an additional uncertainty factor was applied to the no effect level in the subchronic study. Uncertainty in deriving RfDs was mitigated by using uncertainty and modifying factors that normally ranged between 3 and 10. The resulting combination of uncertainty and modifying factors may have reached 1,000 or more. Deriving dermal RfDs and CSFs from oral values may also have caused uncertainty. This was particularly the case when no gastrointestinal absorption rates were available in the literature or when only qualitative statements regarding absorption were available.

Use of Chronic Toxicity Values for Construction Workers – Under the guidelines established by the Superfund program, exposures to construction workers of one year or less are classified as subchronic exposures. Risks for noncarcinogenic effects associated with subchronic exposures should incorporate toxicity values for subchronic and not chronic effects. Subchronic toxicity values are not as widely available as chronic values. Subchronic toxicity values used in this HHRA were obtained from USEPA's PPRTV internet site. Also ATSDR Minimal Risk Levels (MRLs) were used as subchronic toxicity values when PPRTV values were not available. Chronic toxicity values were used when subchronic toxicity values were not available. Using chronic toxicity criteria to evaluate subchronic exposures for construction workers tends to overestimate potential noncarcinogenic risks. Non-cancer risk estimates presented for the construction worker may be overestimated by as much as a factor of 10 because of the

lack of subchronic reference doses/reference concentrations for the COPCs evaluated in this assessment.

6.4 UNCERTAINTY IN THE RISK CHARACTERIZATION

Uncertainty in risk characterization resulted from assumptions made regarding additivity of effects from exposure to multiple COPCs via various exposure routes. High uncertainty exists when summing non-carcinogenic risks for several substances across different exposure pathways. This assumes that each substance has a similar effect and/or mode of action. Even when chemicals affect the same target organs, they may have different mechanisms of action or differ in their fate in the body, so additivity may not be an appropriate assumption in all cases. However, the assumption of additivity was considered because in most cases it represents a conservative estimate of risk. Risks to any individual may also have been overestimated by summing multiple assumed exposure pathway risks for any single receptor. Although every effort was made to develop reasonable scenarios, not all individual receptors may be exposed via all pathways considered.

Finally, the risk characterization did not consider antagonistic or synergistic effects. Little or no information is available to determine the potential for antagonism or synergism for the COPCs. Because chemical specific interactions could not be predicted, the likelihood for risks being over- or under predicted could not be defined, but the methodology used is based on current USEPA guidance.

7.0 REMEDIAL GOAL OPTIONS

Cleanup goals were developed for those media with ILCRs greater than 1×10⁻⁴ and total HIs greater than 1.0. Cleanup goals were derived for those COCs that contribute significantly to the cancer risk and/or HI for each exposure pathway in a given land use scenario for a receptor group. Chemicals were not considered as significant contributors to risk, and were therefore not included as COCs, if their individual carcinogenic risk contribution was less than 1×10⁻⁶ and their non-carcinogenic HQ was less than 0.1. Cleanup goals were calculated using the following equation:

Cleanup Goal [chemical i] = EPC[chemical i] *Target Risk/Calculated Risk[chemical i]

where:

Cleanup goal [chemical i] = chemical-specific cleanup goal

EPC [chemical i] = exposure point concentration used in risk

assessment calculations

Target risk = target risk for carcinogens or the target HQs for

non-carcinogens

Calculated risk [chemical i] = total risk calculated for a specific chemical

in the risk assessment

The cleanup goals calculated for soil are presented in Table 7-1. This table includes USEPA RSL screening criteria.

TABLE 7-1

PRELIMINARY REMEDIAL GOALS HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND

	CONSTRUCTION WORKER											
	USEPA	Targ	Hazard									
Chemical	Industrial RSL ⁽¹⁾	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	index = 1							
·	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)							
2,3,7,8-TCDD Equivalents	1.8E-05	1.5E-04	2.0E-03	1.5E-02	2.8E-04							
Arsenic	1.6E+00	1.2E+01	1.2E+02	1.2E+03	4.5E+01							
Lead	8.0E+02	NA	NA	NA	NA							
Benzo(a)pyrene Equivalents	2.1E-01	2.1E+00	2.1E+01	2.1E+02	NA							
Aroclor-1260	7.4E-01	7.6E+00	7.6E+01	7.6E+02	NA							

RESIDENT ⁽²⁾										
	USEPA	Targ	Hazard							
Chemical	Residential RSL ⁽¹⁾ (mg/kg)	10 ⁻⁶ (mg/kg)	10 ⁻⁵ (mg/kg)	10 ⁻⁴ (mg/kg)	Index = 1 (mg/kg)					
2,3,7,8-TCDD Equivalents	4.5E-06	4.5E-06	4.5E-05	4.5E-04	7.2E-05					
Arsenic	3.9E-01	3.9E-01	3.9E+00	3.9E+01	2.2E+01					
Lead	4.0E+02	NA	NA	NA	NA					
Benzo(a)pyrene Equivalents	1.5E-02	1.5E-02	1.5E-01	1.5E+00	NA					
Aroclor-1260	2.2E-01	2.2E-01	2.2E+00	2.2E+01	NA					

Notes:

- 1 USEPA Regional Screening Level Table, November 2010 [Cancer benchmark value = 1E-06, Hazard index (HI) = 1.0].
- 2 Target cancer risk level based on lifelong resident and hazard index based on child resident.
- NA Not applicable/not available.

8.0 SUMMARY

The HHRA for UXO 32 was performed to characterize potential risks to likely human receptors that could potentially be exposed to soil under current and future land use. Potential receptors evaluated under current and future land use are construction workers and industrial workers. Potential receptors evaluated in the HHRA for future land use are hypothetical recreational users and residents. Although future land use is unlikely to change from current land uses, potential future receptors were evaluated in the HHRA primarily for decision-making purposes.

COPCs were selected for direct contact routes of exposure to environmental media and for the potential migration of chemicals from soil to groundwater. The predominant COPCs (in terms of frequency of detection and magnitude of concentrations) for direct contact exposure are as follows:

- PAHs, PCBs, dioxins/furans, and inorganics were retained as a direct contact COPC in surface soil.
- PAHs and arsenic were retained as direct contact COPCs in subsurface soil.
- Many of these same organic and inorganic chemicals were also selected as COPCs for the evaluation of chemical migration from soil to groundwater.

Quantitative estimates of non-carcinogenic and carcinogenic risks (HIs and ILCRs, respectively) were developed for potential human receptors directly contacting site environmental media. Media with risk estimates exceeding the upper bound of USEPA's target risk range of 10⁻⁴ to 10⁻⁶, or a HI of 1, are identified in the following table.

Summary of Direct Contact Risk Estimates Ingestion, Dermal Contact, and Inhalation of COPCs

Environmental Medium	Receptors With Risk Estimates Exceeding Risk Management Benchmarks	Chemicals of Concern
Surface soil (current)	Child resident ⁽¹⁾ , lifelong resident ⁽²⁾	Arsenic, cPAHs
Surface soil (under cap)	Construction worker ⁽¹⁾ , child resident ⁽¹⁾ , lifelong resident ⁽²⁾	Arsenic, Aroclor-1260, 2,3,7,8- TCDD equivalents
Surface soil (future)	Construction worker ⁽¹⁾ , child resident ⁽¹⁾ , lifelong resident ⁽²⁾	Arsenic, cPAHs, Aroclor-1260, 2,3,7,8-TCDD equivalents
Subsurface Soil	Child resident ⁽¹⁾ , lifelong resident ⁽²⁾	Arsenic, cPAHs

- 1 Receptor risks exceed non-cancer risk benchmark of target organ-specific HI greater than 1.
- 2 Receptor risks exceed 1 x 10⁻⁴ cancer risk benchmark. Risk estimates presented for the lifelong resident (estimates not presented for the various age groups that define this receptor).

Based on lead modeling, the results for surface soil (under cap) and surface soil (future) exceed the USEPA goal of no more than 5 percent of children exceeding a 10 μ g/dL blood-lead level. Except for construction workers exposed to surface soil (under cap), the results for construction workers, industrial workers, and adult recreational users are not at variance with the USEPA goal of no more than 5 percent of children (fetuses of exposed women) exceeding a 10 μ g/dL blood-lead level.

The chemicals selected as COCs based on their potential to migrate from soil to groundwater are presented in the following table.

Chemicals of Concern for Migration from Soil to Groundwater

Environmental Medium	Chemicals selected as COC
Surface soil	Arsenic
Subsurface soil	Arsenic

At UXO 32, the COCs for migration from soil to groundwater were detected in surface soil and subsurface soil samples collected at either the soil-groundwater interface or in the saturated zone.

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ATTACHMENTS

SUPPORTING INFORMATION FOR HEALTH RISK ASSESSMENT

- 1 Positive Detections for Surface and Subsurface Soil
- 2 RAGS Part D Tables
- 3 ProUCL Printouts
- 4 Sample Calculations
- 5 Lead Modeling Results

ATTACHMENT 1

POSITIVE DETECTIONS FOR SURFACE AND SUBSURFACE SOIL



ATTAC*****ENT 1

POSITIVE DETEC7 R SURFACE SOIL

DIRECT CONTACT A. SCTION OF GROUNDWATER CRITERIA

HUMAN HEALTH RIS. JESSMENT - UXO 32

PAGE 1 OF 10 COMPARISON TO DIRECT CONTACT A.

LOCATION SAMPLE ID SAMPLE DATE	Region Screeni	al ng	USEPA Region Screening Levels ^(1,2)	U32SA01SB0101 20101027	U325A015B02 U325A015B0201 20101027	U32SA02SB01 U32SA02SB0101 20101027	U32SA02SB02 U32SA02SB0201 20101027	U32SA03SB01 U32SA03SB0101 20101027	U32SA03SB02 U32SA03SB0201 20101027	U32SA04SB01 U32SA04SB0101 20101027
SAMPLE CODE MATRIX	Levels ⁽¹ Residentia		Protection of Groundwater SSLs	so	NORMAL SO	NORMAL SO	NORMAL SO	NORMAL SO	NORMAL SO	NORMAL 50
SAMPLE TYPE			33L5	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION				NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX				SS	SS	SS	SS	\$S	5S	SS
TOP DEPTH				1	1	1	1	1	1	1
BOTTOM DEPTH			i	2	2	2	2	2	2	2
DIOXINS/FURANS (NG/KG)										
1,2,3,4,6,7,8,9-OCDD	15000	L.	870	NA	NA	NA NA	NA	NA	NA NA	NA
1,2,3,4,6,7,8,9-OCDF	15000	C	870	NA	NA NA	NA NA	NA NA	NA	NA NA	NA .
1,2,3,4,6,7,8-HPCDD	450	C	26	NA NA	NA NA	NA	NA	NA_	NA NA	NA
1,2,3,4,6,7,8-HPCDF 1,2,3,4,7,8,9-HPCDF	450 450	C	26 26	NA NA	NA.	NA NA	NA NA	NA NA	NA NA	NA
1,2,3,4,7,8,9-HPCDF	450	c	2.6	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,6,7,8-HXCDD	45	č	2.6	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,6,7,8-HXCDF	45	č	2.6	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,7,8,9-HXCDD	45	č	2.6	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,7,8-PECDF	150	c	8.7	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,4,6,7,8-HXCDF	45	c		NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA
2,3,4,7,8-PECDF	15	C		NA NA	NA	NA NA	NA	, NA	NA	NA
2,3,7,8-TCDD	4.5	C	0.26	NA NA	NA	NA	NA NA	NA NA	NA NA	NA
2,3,7,8-TCDF	45	С	2.6	NA	NA	NA NA	NA	NA	. NA	NA
TEQ	4.5	С		NA	NA	NA	NA NA	NA NA	NA NA	NA .
TEQ - HALFND	4.5	c	0.26	NA	NA	NA NA	NA NA	NA NA	NA	NA
TOTAL HPCDD	94	C	9	. NA	NA	NA NA	NA NA	NA NA	NA NA	. NA
TOTAL HPCDF	NC NC		NC NC	NA NA	NA	NA	NA NA	NA .	NA NA	NA NA
TOTAL HXCDD TOTAL HXCDF	NC NC	+-	NC NC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA
TOTAL PECDF	NC NC	+	NC NC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDD	NC NC	+	NC NC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDF	NC NC	+	NC NC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
METALS (MG/KG)	110		1 100 1	1			1 170	NA.	19/5	(VA
ARSENIC	0.39	Тс	0.0013	45.7	23.9	14.6	14.7	25.8	15.4	16.7
BARIUM	1500	Ņ	300	NA NA	NA	NA	NA .	NA	NA	NA
				1/4		NA NA	NA NA	NA NA	NA NA	
CADMIUM	7	N	1.4	NA	NA	1971	i in			NA NA
CHROMIUM	7 12000	N ⁽³⁾	99000000	(3) NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA
CHROMIUM LEAD	7 12000 400	N(3)	99000000	(3) NA (4) NA	NA NA	NA NA	NA NA	NA NA	NA NA	
CHROMIUM LEAD MERCURY	7 12000 400 2.3	N ⁽³⁾	99000000	(3) NA	NA NA NA	NA NA	NA NA	NA NA	NA NA	NA
CHROMIUM LEAD MERCURY SELENIUM	7 12000 400 2.3 39	N ⁽³⁾ N N ⁽⁵⁾ N	99000000 14 0.03 0.95	(3) NA NA NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC	7 12000 400 2.3	N ⁽³⁾ N N ⁽⁵⁾	99000000 14 0.03 0.95	(3) NA (4) NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%)	7 12000 400 2.3 39 2300	N ⁽³⁾ N N ⁽⁵⁾ N	99000000 0 14 0.03 0.95 680	(3) NA (4) NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE	7 12000 400 2.3 39 2300	N ⁽³⁾ N N ⁽⁵⁾ N	99000000 4 14 4 0.03 0.95 680	(3) NA NA NA NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIOS	7 12000 400 2.3 39 2300	N ⁽³⁾ N N ⁽⁵⁾ N	99000000 0 14 0.03 0.95 680	(3) NA (4) NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG)	7 12000 400 2.3 39 2300 NC NC	N ⁽³⁾ N N N ⁽⁵⁾ N	99000000 14 0.03 0.95 680 NC NC	(3) NA (4) NA NA NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260	7 12000 400 2.3 39 2300	N ⁽³⁾ N N ⁽⁵⁾ N	99000000 14 0.03 0.95 680 NC NC	(3) NA NA NA NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLUS PCBS (UG/KG) AROCLOR-1260 AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)	7 12000 400 2.3 39 2300 NC NC	N ⁽³⁾ N N N N C	99000000 14 0.03 0.95 680 NC NC 24	(3) NA (6) NA (7) NA (7	NA	NA	NA	NA	NA	NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260	7 12000 400 2.3 39 2300 NC NC	N ⁽³⁾ N N ⁽⁵⁾ N N	99000000 14 0.03 0.95 680 NC NC 24 750	(3) NA (4) NA NA NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA	NA	NA NA NA NA NA NA
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIOS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE	7 12000 400 2.3 39 2300 NC NC	N ⁽³⁾ N N N N C	99000000 14 6 6 6 6 6 6 6 6 6	NA	NA N	NA	NA	NA	NA	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLINAPITHALENE ACENAPITHYLENE	7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000	N ⁽³⁾ N N ⁽⁵⁾ N N N N N N N N N N N N N N N N N N N	99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000	(3) NA (4) NA (5) NA (7) NA	NA N	NA	NA	NA	NA	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ANTHRACENE	7 12000 400 2.3 39 2300 NC NC 220 31000 340000	N ⁽³⁾ N N ⁽⁵⁾ N N N	99000000 14 6 6 6 6 6 6 6 6 6	(3) NA (4) NA (5) NA (7) NA (7	NA N	NA	NA	NA	NA	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) ACENAPHTHYLENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	7 12000 400 2.3 39 2300 NC NC NC 31000 340000 15	N(3) N N N N N N N N N C	99000000 14 0 0 0 0 0 0 0 0 0	(9) NA (9) NA	NA N	NA N	NA N	NA N	NA N	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLINAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE	7 12000 400 2.3 39 2300 NC NC NC 220 31000 340000 1700000 15 15 15 150 150 NC	N(5) N N N N N N C C C C C C	99000000 114 0.03 0.03 0.95 680 NC NC 24 22000 0.360000 3.5 3.5 1.0 3.5 3.5	(3) NA (4) NA (5) NA (7) NA (7	NA N	NA N	NA N	NA N	NA N	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 AROCLOR-1260 Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BERZO(A)AYTERE BERZO(A)AYTERE BERZO(A)AYTERE BERZO(A)AYTERE	7 12000 400 2.3 39 2300 NC NC NC 31000 340000 1700000 15 15 150 150 150 150 150 150 150	N(3) N N(5) N N N N N C C C C C C C	99000000 14 10 0.03 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 3.5 10 3.5 35	NA	NA N	NA N	NA N	NA N	NA N	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) ACENAPHTHYLENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT-HALFND BAP EQUIVALENT-HALFND BAP EQUIVALENT-HALFND BAP EQUIVALENT-HALFND BAP EQUIVALENT-HALFND BAP EQUIVALENT-HALFND BENZO(A)PYRENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE	7 12000 400 2.3 39 2300 NC NC NC 220 31000 340000 15 15 15 150 170000 1700000 1700000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 170000 1700000 1700000 1700000 1700000 1700000 1700000 1700000 17000000 17000000 17000000 170000000 170000000 17000000 170000000 17000000 17	N(3) N N(5) N N N N N C C C C C C C N(7)	99000000 14 14 14 15 15 15 15 15	NA	NA N	NA N	NA N	NA N	NA N	NA N
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CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) ACHAPHTHYLENE ACHAPHTHYLENE ANTHRACENE BAP EQUIVALENT—HALFND BERZO(A)PYRENE BERZO(A)PYRENE BERZO(A)PYRENE BERZO(G,H,I)PERYLENE BERZO(G,H,I)PERYLENE BERZO(G,H,I)PERYLENE BERZO(K)FLUORANTHENE BERZO(K)FLUORANTHENE BERZO(K)FLUORANTHENE	7 12000 2.3 39 2300 NC NC NC 31000 340000 17000000 15 15 150 170000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 150000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 150	N(3) N N N(5) N N N N N N N N N N N N N N N N N N N	99000000 14 14 15 15 15 15 15 15	NA	NA N	NA N	NA N	NA N	NA N	NA N
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CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLLOS PCBS (UG/KG) AROCLOR-1260 AROCLOR-1260 AROCLOR-1260 AROCLOR-1740 AROCLOR-1740 BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A) WATERNE BENZO(A) PYRENE BENZO(B) FLUORANTHENE BENZO(G, H, D) PERVILENE BENZO(G, H, D) PERVILENE BENZO(G, H, L) PERVILENE BENZO(G, H, L) DORANTHENE CHRYSENE DIBENZO(A, L) ORANTHENE CHRYSENE DIBENZO(A, L) ORANTHENE CHRYSENE DIBENZO(A, L) ORANTHENE CHRYSENE DIBENZO(A, L) ORANTHENE CHRYSENE	7 12000 230000 15000 15000 15000 15000 120000 1200000 150000 1500000 150000 150000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 150000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 150000	N(3)	99000000 14 14 15 16 16 16 16 16 16 16	NA	NA N	NA N	NA	NA N	NA N	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT-HALFND BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B)PLUORANTHENE BENZO(B)PLUORANTHENE BENZO(B)FLUORANTHENE CHRYSENE BENZO(K)FLUORANTHENE CHRYSENE DIBENZO(K,H)ANTHRACENE EDENZO(K,H)ANTHRACENE EDENZO(K,H)ANTHRACENE EDENZO(K,H)ANTHRACENE EDENZO(K,H)ANTHRACENE FLUORANTHENE	7 12000 7 12000 1500 15500 15500 1230000 230000 230000 20000 230000 40000 15500 1550 150 150 150 150 150 150	N(3) N N(5) N N N N N N N N N N N N N N N N N N N	99000000 14 0.03 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 3.5 10 3.5 120000 350 110 110 160000 27000	(3) NA (4) NA (5) NA (7) NA (7) NA (8) NA (8	NA N	NA	NA	NA N	NA N	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G)PILIORANTHENE BENZO(G)FILIORANTHENE CHRYSENE DIBENZO(A, H)MATHRACENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORENE INDENOCIA, 2,3-CD)PYRENE	7 12000 7 12000 15000 15000 230000 230000 150 120000 230000 150 150 150 150 150 150 150 150 150	N(3) N N(5) N N N N N N N N N N N N N N N N N N N	99000000 14 0.03 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 10 3.5 12000 11 160000 27000 27000 120	NA	NA N	NA N	NA	NA	NA N	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) ACROLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) ACHTHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT-HALFND BERZO(A)AWATHRACENE BERZO(A)PYRENE BERZO(A)PYRENE BERZO(B)FLUORANTHENE BERZO(C)B/FLUORANTHENE BERZO(K)FLUORANTHENE BERZO(K)FLUORANTHENE BERZO(K)FLUORANTHENE BENZO(C)K-PLUORANTHENE BENZ	7 12000 230000 230000 150 0 3600 1500 0 3600 0 3600 0 1500 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600 0 3600	N(3) N N(5) N N N N N N N N N N N N N N N N N N N	99000000 14 0 0 0 0 0 0 0 0 0	NA	NA	NA	NA	NA	NA N	NA N
CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G)PILIORANTHENE BENZO(G)FILIORANTHENE CHRYSENE DIBENZO(A, H)MATHRACENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORENE INDENOCIA, 2,3-CD)PYRENE	7 12000 7 12000 15000 15000 230000 230000 150 120000 230000 150 150 150 150 150 150 150 150 150	N(3) N N(5) N N N N N N N N N N N N N N N N N N N	99000000 14 0.03 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 10 3.5 12000 11 160000 27000 27000 120	NA	NA N	NA N	NA	NA	NA N	NA N

ATTAC MENT 1

POSITIVE DETECT 9 SURFACE SOIL

COMPARISON TO DIRECT CONTACT 4

HUMAN HEALTH RIS. ASSMENT - UXO 32

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LOCATION	Adjusted U	SEPA	USEPA Region	nal	U32SA04SB02		U32SA05SB01		U32SA05SB02	U32SA06SB01	U32SA06SB02
SAMPLE ID	Regiona		Screening		U32SA04SB0201	U32SA05SB01Q1	U32SA05SB0101-AVG	U32SA05SB0101-D	U32SA05SB0201	U32SA06SB0101	U32SA06SB0201
	Screenin		Levels ^(1,2)		20101027	20101027	20101027	20101027	20101027	20101027	20101027
SAMPLE DATE											
SAMPLE CODE	Levels ^{(1,}		Protection o		NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL
MATRIX	Residential	Soil	Groundwate	er	SO SO	SO SO	SO SO	50	50	so	so
SAMPLE TYPE	ł		SSLs		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION				ı	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX					SS	SS	SS	SS	SS	SS	SS
						l					
TOP DEPTH	1				1	1	1	1	1	1	1 1
BOTTOM DEPTH	ł		ļ		2	2	2	2	2	2	2
DIOXINS/FURANS (NG/KG)											
1,2,3,4,6,7,8,9-OCDD	15000	TC	870		NA	NA NA	NA	NA	NA	NA	NA NA
1,2,3,4,6,7,8,9-OCDF	15000	C	870		NA	NA.	NA	NA	NA NA	NA NA	NA.
1,2,3,4,6,7,8-HPCDD	450	C	26	1	NA	NA NA	NA	NA	NA	NA NA	NA NA
1,2,3,4,6,7,8-HPCDF	450	C	26		NA NA	NA NA	NA	NA NA	NA	NA NA	NA NA
1,2,3,4,7,8,9-HPCDF	450	C	26		NA	NA NA	NA NA	NA	NA .	NA NA	NA NA
1,2,3,4,7,8-HXCDF	45	C	2.6		NA	NA NA	NA NA	NA .	NA	NA	NA NA
1,2,3,6,7,8-HXCDD	45	С	2.6		NA.	NA NA	NA NA	NA	NA NA	NA NA	NA
1,2,3,6,7,8-HXCDF	45	С	2.6		NA.	NA NA	NA NA	NA .	NA	NA	NA NA
1,2,3,7,8,9-HXCDD	45	C	2.6		NA	NA	NA	NA	NA	NA NA	NA
1,2,3,7,8-PECDF	150	Ċ	8.7		NA	NA NA	NA NA	NA	NA NA	NA NA	NA
2,3,4,6,7,8-HXCDF	45	Ť	2.6	П	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA
2,3,4,7,8-PECDF	15	ľč	0.87	П	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA
2,3,7,8-TCDD	4.5	Č	0.26	\top	NA	NA.	NA NA	NA	NA NA	NA NA	NA NA
2,3,7,8-TCDF	45	č	2.6	Н	NA NA	NA NA	NA NA	NA NA	NA.	NA NA	NA NA
TEQ	4.5	Ť	0.26	T	NA	NA NA	NA NA	NA	NA	NA	NA NA
TEQ - HALFND	4.5	Ť	0.26	1	NA NA	NA.	NA NA	NA	NA NA	NA	NA NA
TOTAL HPCDD	94	Č	9		NA NA	NA.	NA NA	NA NA	NA	NA NA	NA NA
TOTAL HPCDF	NC -	1-	NC	1	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA.
TOTAL HXCDD	NC NC	+	NC NC	+	NA .	NA.	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HXCDF	NC NC	1	NC NC	+	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA
TOTAL PECDF	NC NC	+	NC NC	1	NA NA	NA NA	NA NA	NA NA	NA NA	NA.	NA.
TOTAL TCDD	NC NC	+-	NC NC	+	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
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	I NC	1	I NC				I NA	INΔ	I NA	I NA	I NA
TOTAL TCDF	NC .		NC	لسل	NA NA	NA	NA NA	NA NA	NA	NA NA	NA NA
METALS (MG/KG)		1									
METALS (MG/KG) ARSENIC	0.39	C	0.0013		12.7	315	284	253	34.7	35.2	16.1
METALS (MG/KG) ARSENIC BARIUM	0.39 1500	N	0.0013 300	E	12.7 NA	315 NA	284 NA	2453 NA	34.7 NA	35.2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM	0.39 1500 7	N	0.0013 300 1.4	(3)	12.7 NA NA	315 NA NA	284 NA NA	22-53 NA NA	34.7 NA NA	35.2 NA NA	16.1 NA NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM CHROMIUM	0.39 1500 7 12000	N N N ⁽³⁾	0.0013 300 1.4 99000000	(3)	12.7 NA NA NA	315 NA NA NA	284 NA NA NA	253 NA NA NA	34.7 NA NA NA	35.2 NA NA NA	16.1 NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CCHOMIUM LIEAD	0.39 1500 7 12000 400	N N N ⁽³⁾ N	0.0013 300 1.4 99000000 14	(3)	12.7 NA NA NA NA	315 NA NA NA NA	234 NA NA NA NA	22-73 NA NA NA NA	34.7 NA NA NA NA	35.2 NA NA NA NA	16:1 NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY	0.39 1500 7 12000 400 2.3	N N N ⁽³⁾ N N ⁽⁵⁾	0.0013 300 1.4 99000000 14 0.03	(3)	12.7 NA NA NA NA	315 NA NA NA NA	284 NA NA NA NA	2.58 NA NA NA NA	34.7 NA NA NA NA	35.2 NA NA NA NA	16:1 NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM	0.39 1500 7 12000 400 2.3 39	N N N ⁽³⁾ N N ⁽⁵⁾	0.0013 300 1.4 99000000 14 0.03	(3)	NA NA NA NA NA NA	315 NA NA NA NA NA	284 NA NA NA NA NA	253 NA NA NA NA NA	34.7 NA NA NA NA NA	35.2 NA NA NA NA NA	16:1 NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CADMIUM LIEAD MERCURY SELENIUM ZINC	0.39 1500 7 12000 400 2.3	N N N ⁽³⁾ N N ⁽⁵⁾	0.0013 300 1.4 99000000 14 0.03	(3)	12.7 NA NA NA NA	315 NA NA NA NA	284 NA NA NA NA	2.58 NA NA NA NA	34.7 NA NA NA NA	35.2 NA NA NA NA	16:1 NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%)	0.39 1500 7 12000 400 2.3 39 2300	N N N ⁽³⁾ N N ⁽⁵⁾	0.0013 300 1.4 99000000 14 0.03 0.95 680	(3)	12.7 NA NA NA NA NA NA	315 NA NA NA NA NA NA	ZS4 NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA	34.7 NA NA NA NA NA NA	35-2 NA NA NA NA NA NA	16:1 NA NA NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE	0.39 1500 7 12000 400 2.3 39 2300	N N N ⁽³⁾ N N ⁽⁵⁾	0.0013 300 1.4 99000000 14 0.03 0.95 680	(3)	12.7 NA NA NA NA NA NA NA	NA N	2194 NA NA NA NA NA NA	NA N	34.7 NA NA NA NA NA NA	35,2 NA NA NA NA NA NA	16.1 NA NA NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS	0.39 1500 7 12000 400 2.3 39 2300	N N N ⁽³⁾ N N ⁽⁵⁾	0.0013 300 1.4 99000000 14 0.03 0.95 680	(3)	12.7 NA NA NA NA NA NA	315 NA NA NA NA NA NA	ZS4 NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA	34.7 NA NA NA NA NA NA	35-2 NA NA NA NA NA NA	16:1 NA NA NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POES (UG/KG)	0.39 1500 7 12000 400 2.3 39 2300 NC	N N N ⁽³⁾ N N ⁽⁵⁾ N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC	(3)	12.7 NA	NA N	ZIS4 NA NA NA NA NA NA NA NA	NA N	34.7 NA	35,2 NA NA NA NA NA NA NA NA	16.1 NA NA NA NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CADMIUM LIEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260	0.39 1500 7 12000 400 2.3 39 2300	N N N ⁽³⁾ N N ⁽⁵⁾	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC	(3)	12.7 NA NA NA NA NA NA NA	NA N	2194 NA NA NA NA NA NA	NA N	34.7 NA NA NA NA NA NA	35,2 NA NA NA NA NA NA	16.1 NA NA NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PEBS (UG/KG) AROCLOR-1260 AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)	0.39 1500 7 12000 400 2.3 39 2300 NC NC	N N N ⁽³⁾ N N ⁽⁵⁾ N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC	(3)	12.7 NA	NA N	ZIB4 NA NA NA NA NA NA NA NA NA	NA N	34.7 NA	35,2 NA	16.1 NA NA NA NA NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC	N N N ⁽³⁾ N N ⁽⁵⁾ N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC	(3)	12.7 NA	NA N	234 NA	NA N	34.7 NA	35-2 NA	16.1 NA NA NA NA NA NA NA NA NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CADMIUM LIEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) PAOCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE	0.39 1500 7 12000 2.3 39 2300 NC NC NC	N N N(3) N N(5) N N	0.0013 300 1.4 99000000 14 0.03 6.95 680 NC NC	(3)	12.7 NA	NA N	284 NA	22-3 NA NA NA NA NA NA NA NA NA NA	34.7 NA	35.2 NA NA NA NA NA NA NA NA NA NA	16.1 NA NA NA NA NA NA NA NA NA N
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 360000	(3)	12.7 NA	NA N	2184 NA NA NA NA NA NA NA NA NA NA	24-54 NA	34.7 NA	35.2 NA NA NA NA NA NA NA NA NA NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5	(3)	12.7 NA	NA N	2184 NA	21-3 NA NA NA NA NA NA NA NA NA NA	34.7 NA	35,2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC. MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTYLENE ANTHRACENE BAP EQUIVALENT HALFND	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 360000 3.5 3.5	(3)	12.7 NA	NA N	2184 NA	21-51 NA NA NA NA NA NA NA NA NA NA	34.7 NA	35,2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 360000 3.5 3.5	(3)	12.7 NA	NA N	2184 NA	21-51 NA NA NA NA NA NA NA NA NA NA	34.7 NA	35,2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC. MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTYLENE ANTHRACENE BAP EQUIVALENT HALFND	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 360000 3.5 3.5	(3)	12.7 NA	NA N	284 NA	21-51 NA	34.7 NA	35,2 NA	16.1 NA NA NA NA NA NA NA NA NA N
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLINAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT-HALFND BBP EQUIVALENT-HALFND BBP EQUIVALENT-HALFND BBRNZO(A)AMTHRACENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 17000000 15 15	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 360000 3.5 3.5	(6)	12.7 NA	NA N	2184 NA	24-54 NA NA NA NA NA NA NA NA NA NA	34.7 NA	35.2 NA NA NA NA NA NA NA NA NA N	16.1 NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACEMAPHTHYLENE BAP EQUIVALENT HALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PYRENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC NC 31000 340000 1700000 15 15	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 10 3.5	(6)	12.7 NA	315 NA NA NA NA NA NA NA NA NA NA	284 NA	21-51 NA	34.7 NA	35,2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQU	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15 15 15 15	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 3.5 10 3.5 3.5 120000	(6)	12.7 NA	NA N	2184 NA	24-54 NA NA NA NA NA NA NA NA NA NA	34.7 NA	35,2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POBY (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT HALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(B)FURENE BENZO(B)FURENE BENZO(B)FURENE BENZO(B)FURENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 310000 1700000 15 15 15 150 150 170000	N N N(S) N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 350000 3.5 1.0 3.5 3.5	(6)	12.7 NA	NA N	2184 NA	21-3 NA NA NA NA NA NA NA NA NA NA	34.7 NA	35-2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLINAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15 15 15 150 170000 1500	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 350000 3.5 3.5 120000 350 1100	(6)	12.7 NA	NA N	284 NA	21-13 NA	34.7 NA	35,2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC. MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(B,H,I)PERYLENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC NC 31000 340000 1700000 15 15 150 1500 15000	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 10 3.5 3.5 120000 350 11000	(6)	12.7 NA	315 NA	284 NA	21-51 NA	34.7 NA	35-2 NA	16.1 NA
METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACEMAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(G,H,I)PERRYLENE CHRYSENE CHRYSENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15 15 150 150 1500 15000 15000	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 350000 3.5 10 3.5 120000 3.5 110 11100 11 1600000	(6)	12.7 NA	NA N	2184 NA	24-54 NA	34.7 NA	35,2 NA	16.1 NA NA NA NA NA NA NA NA NA N
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE CHRYSENE DIBENZO(A)AINTHRACENE BENZO(G)AINTHRACENE BENZO(G)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(G)AINANTHRACENE EIBENZO(A)AINANTHRACENE EIBENZO(A)AINANTHRACENE EIBENZO(A)AINANTHRACENE EIBENZO(A)AINANTHRACENE EIBENZO(A)AINANTHRACENE EILUORANTHENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC NC 31000 340000 1700000 15 15 150 15000 15000 15000 15230000	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 360000 3.5 1.0 3.5 3.5 120000 350 1100 1110 1160000 270000	(6)	12.7	315 NA	284 NA	255 NA	34.7 NA	35,2 NA	16.1 NA NA NA NA NA NA NA NA NA N
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC. MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G,H,I)PERRUENE BENZO(B)FLUORANTHENE GENZO(C,H)PANTHENE GENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE FLUORANTHENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC NC 31000 340000 150 150 15000 15000 15000 15000 230000 230000	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 360000 3.5 10 3.5 3.5 120000 350 11100 111 160000 27000	(6)	12.7 NA	NA N	284 NA	21-13 NA	34.7 NA NA NA NA NA NA NA NA NA N	35.2 NA NA NA NA NA NA NA NA NA N	16.1 NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM) LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLINAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALEND BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G,H,1)PERYLENE BENZO(G,H,1)PERYLENE BENZO(G,H,1)PARTHENE CHRYSENE DIBENZO(G,H,1)PARTHENE ELUCRANTHENE FLUORANTHENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC 1220 31000 340000 1700000 15 15 15 150 1700000 15000 15000 230000 230000 230000 230000	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 124 750 22000 3500000 3.5 3.5 10 3.5 110 3.5 120000 350 11100 1100 12000 120	(3) (4) (6) (7)	12.7 NA	NA N	284 NA	21-51 NA	34.7 NA	35.2 NA NA NA NA NA NA NA NA NA N	16.1 NA
METALS (MG/KG) ARSENIC BARIUM (CADMIUM (CHROMIUM LEAD MERCURY SELENIUM ZINC. MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G,H,I)PERRUENE BENZO(B)FLUORANTHENE GENZO(C,H)PANTHENE GENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE BENZO(C,H)ANTHRACENE FLUORANTHENE	0.39 1500 7 12000 400 2.3 39 2300 NC NC NC 31000 340000 150 150 15000 15000 15000 15000 230000 230000	N N N N N N N N N N N N N N N N N N N	0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 360000 3.5 10 3.5 3.5 11 160000 27000 120 0.47 120000	(6)	12.7 NA	NA N	284 NA	21-13 NA	34.7 NA NA NA NA NA NA NA NA NA N	35.2 NA NA NA NA NA NA NA NA NA N	16.1 NA

ATTACUMENT 1
POSITIVE DETECT: 3 SU
COMPARISON TO DIRECT CONTACT AF .C.Tik
HUMAN HEALTH RIS. 2SSM
PAGE 3 OF 10 R SURFACE SOIL
CTION OF GROUNDWATER CRITERIA
ESSMENT - UXO 32

LOCATION	Adjusted U	SEPA	USEPA Region	al	U32SA07SB01		U32SA07SB02		U325A085B01	U325A085B02	U32SA09SB01
SAMPLE ID	Regiona		Screening	1	U32SA07SB0101	U32SA07SB0201	U32SA07SB0201-AVG	U32SA07SB0201-D	U32SA08SB0101	U32SA08SB0201	U32SA09SB0101
SAMPLE DATE	Screenin	ng	Levels ^(1,2)		20101028	20101027	20101027	20101027	20101028	20101027	20101028
SAMPLE CODE	Levels ⁽¹	,2)	Protection of		NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL.	NORMAL
MATRIX	Residentia	l Soil	Groundwater		so	so	so	50	SO	so	so
SAMPLE TYPE			SSLs	- 1	NORMAL						
POSITION	1		l		NOT UNDER CAP						
SUBMATRIX	1				SS	SS	SS SS	SS	SS	SS	SS
				- 1						1	
TOP DEPTH				ı	1	1	1	1	1		1
BOTTOM DEPTH	1				2	2	2	2	2	2	2
DIOXINS/FURANS (NG/KG)		-									
1,2,3,4,6,7,8,9-OCDD	15000	C	870		NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA
1,2,3,4,6,7,8,9-OCDF	15000	. <u>c</u>	870		NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,4,6,7,8-HPCDD	450 450	- 	26	_	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,4,6,7,8-HPCDF 1,2,3,4,7,8,9-HPCDF	450	1	26		NA NA	NA NA					
1,2,3,4,7,8,9-HPCDF 1,2,3,4,7,8-HXCDF	45	- C	2.6	+	NA NA	NA NA	NA NA				
1,2,3,6,7,8-HXCDD	45	c	2.6		NA NA						
1,2,3,6,7,8-HXCDF	45	c	2.6	+-	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA
1,2,3,7,8,9-HXCDD	45	Ť	2.6	+	NA NA						
1,2,3,7,8-PECDF	150	č	8.7	_	NA NA						
2,3,4,6,7,8-HXCDF	45	Č	2.6		NA	NA NA	NA NA	NA	NA	NA NA	NA NA
2,3,4,7,8-PECDF	15	Ċ	0.87		NA	NA	NA NA	NA	NA	NA	NA NA
2,3,7,8-TCDD	4.5	c	0.26	\perp	NA	NA	NA	NA	NA	NA	NA NA
2,3,7,8-TCDF	45	С	2.6		NA	NA	NA NA	NA	NA	NA	NA
TEQ	4.5	С	0.26		NA	NA NA	NA	NA	NA	NA NA	NA NA
TEQ - HALFND	4.5	С	0.26		NA	NA NA	NA	NA	NA	NA	NA NA
TOTAL HPCDD	94	С	9	\perp	NA .	NA NA	NA NA	NA	NA NA	NA.	NA NA
TOTAL HPCDF	NC		NC	_	NA	NA	NA	NA _	NA NA	NA	NANA
TOTAL HXCDD	NC		NC		NA NA	NA .	NA	NA NA	NA	NA NA	NA NA
TOTAL HXCDF	NC	-	NC	+	NA	NA	NA NA	NA	NA NA	NA	NA NA
TOTAL PECDF	NC NC	+	NC	+	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDD	NC NC		NC NC	+	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDF METALS (MG/KG)	INC		IVC		NA NA	NA	INA.	INA	I NA	IVA	I IVA
ARSENIC	0.39	С	0.0013	_	3.91	109	115	121	12.6	129	3.65
BARIUM	1500	N	300	_	NA	NA NA	NA NA	NA NA	NA	NA	NA.
CADMIUM	7	N	1.4	1	NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA
CHROMIUM	12000	N ⁽³⁾		(3)	NA.	NA NA	NA NA	NA NA	NA	NA NA	NA NA
LEAD	400	N		(4)	NA	NA	NA NA	NA NA	NA	NA NA	NA NA
MERCURY	2.3	N ⁽⁵⁾	0.03	\neg	NA	NA NA	NA NA	NA	NA	NA	NA NA
SELENIUM	39	N	0.95	+	NA NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA
ZINC	2300	N	680	\neg	NA	NA	NA .	NA NA	NA	NA NA	NA NA
MISCELLANEOUS PARAMETERS (%)											
PERCENT MOISTURE	NC		NC	7	NA	NA NA	NA !	NA	NA	NA	NA NA
TOTAL SOLIDS	NC		NC		NA	NA	NA NA	NA.	NA	NA NA	NA.
PCBS (UG/KG)							I. INA	INA.	I INM		I IVA
									•	· · · · · · · · · · · · · · · · · · ·	
AROCLOR-1260	220	С		I	NA	NA	NA NA	NA NA	NA NA	NA	NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)			24	I		NA	NA NA	NA	NA	NA	NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE	31000	N	750	1	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMAPHTHALENE ACENAPHTHYLENE	31000 340000	N _(e)	750 22000	(6)	NA NA	NA NA NA	NA NA NA	NA NA _ NA	NA NA NA	NA NA NA	NA NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE	31000 340000 1700000	N _(e)	750 22000 360000	(6)	NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP FQUIVALENT	31000 340000 1700000 15	N N ⁽⁶⁾ N	750 22000 360000 3.5	(6)	NA NA NA NA	NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA NA	NA NA NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT-HALFND	31000 340000 1700000 15 15	N N ⁽⁶⁾ N C	750 22000 360000 3.5 3.5	(6)	NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYUMPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT-HALFND BENZO(A)ANTHRACENE	31000 340000 1700000 15 15 15	N N ⁽⁶⁾ N C C	750 22000 360000 3.5 3.5 10	(6)	NA NA NA NA NA	NA NA NA NA NA NA NA NA	NA	NA	NA	NA	NA NA NA NA NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE	31000 340000 1700000 15 15 15 150	N (6) C C C C	750 22000 360000 3.5 3.5 10 3.5	(6)	NA NA NA NA NA NA	NA NA NA NA NA NA NA	NA	NA	NA	NA NA NA NA NA NA NA	NA NA NA NA NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYULAPHTHALENE ACENAPHTHYLENE BAPEQUIVALENT BAP EQUIVALENT BAP EQUIVALENT-HALEND BENZO(A)APTIRACENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B)ELUORANTHENE	31000 340000 1700000 15 15 15 150 15	N N C C C C C C	750 22000 360000 3.5 3.5 10 3.5 3.5	(6)	NA NA NA NA NA NA	NA	NA	NA N	NA	NA	NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLINAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE	31000 340000 1700000 15 15 150 150 150 170000	N N ⁽⁶⁾ N C C C C C C C C C C	750 22000 360000 3.5 3.5 3.5 10 3.5 3.5 120000	(6)	NA NA NA NA NA NA NA	NA	NA N	NA N	NA N	NA NA NA NA NA NA NA	NA NA NA NA NA NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(B)FLUORANTHENE BENZO(B,H,J)PERYLENE BENZO(G,H,J)PERYLENE BENZO(K,H,U)PERYLENE BENZO(K,H,UORANTHENE	31000 340000 17000000 15 15 150 150 150 170000 1500	N N C C C C C C C C C C C C C C C C C C	24 250 22000 360000 3.5 3.5 10 3.5 35 120000 350	(6)	NA	NA N	NA N	NA N	NA N	NA N	NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYUMPHTHALENE ACENAPHTHYLENE AATHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT-HALFND BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE CHRYSENE	31000 340000 1700000 15 15 15 15 150 150 170000 15000	N N(6) N C C C C C C C C C C C C C C C C C C C	24 750 22000 360000 3.5 3.5 10 3.5 35 120000 1100	(6)	NA N	NA N	NA N	NA N	NA N	NA N	NA N
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT-BALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE CHRYSENE DIBENZO(K)ALANTHRACENE	31000 340000 1700000 15 15 15 150 150 170000 1500 15	N N(6) N C C C C C C C C C C C C C C C C C C	24 759 22000 360000 3.5 3.5 10 3.5 120000 350 1100	(6)	NA N	NA N	NA N	NA N	NA N	NA N	NA
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLIAPHITHALENE ACENAPHITHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B,H)DERNUENE BENZO(B,H)DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE BENZO(B,H,DERNUENE CHRYSENE DIBENZO(K,H,BANTHRACENE FLUORANTHENE	31000 340000 1700000 15 15 150 150 170000 1500 15	N N(6) N C C C C C C C C C C N(7) C C C C C C C C C C C C C C C C C C C	24 750 22000 360000 3.5 3.5 10 3.5 35 120000 1100 11 160000	(7)	NA N	NA N	NA N	NA N	NA N	NA N	NA N
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLINAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT-HALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE DIBENZO(A, H)ANTHRACENE FLUORANTHENE FLUORANTHENE FLUORANTHENE	31000 340000 1700000 15 15 15 150 170000 15000 15000 15000 230000 230000	N N(6) N C C C C C C C C C C C C C C C C C C C	24 250 22000 360000 3.5 3.5 10 3.5 35 120000 350 1100 111 160000 27000	(6)	NA N	NA N	NA N	NA N	NA N	NA N	NA N
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT HALFND BENZO(A)AMTHRACENE BENZO(A)PYRENE BENZO(B)LUORANTHENE BENZO(B, H)DERVLENE BENZO(B, H)DERV	31000 340000 1700000 15 15 150 150 170000 15000 15000 230000 150	N N C C C C C C C C C C C C C C C C C C	24 750 22000 360000 3.5 3.5 10 3.5 35 120000 1100 11 160000	(7)	NA N	NA N	NA N	NA N	NA N	NA N	NA N
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYUMPHTHALENE ACENAPHTHYLENE AANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B,H_JDERNYLENE BENZO(B,H_JDERNYLENE BENZO(B,H_JDERNYLENE BENZO(B,H_JNERNYLENE DIBENZO(B,H_JNERNYLENE DIBENZO(B,H_JNERNYLENE DIBENZO(B,H_JNERNYLENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORENE INDENO(1,2,3-CD)PYRENE NAPHTHALENE	31000 340000 1700000 15 15 15 150 170000 15000 15000 15000 230000 230000	N N C C C C C C C C C C C C C C C C C C	24 750 22000 360000 3.5 3.5 10 3.5 35 120000 350 1100 111 160000 27000 120	(7)	NA N	NA N	NA N	NA N	NA N	NA N	NA N
AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT HALFND BENZO(A)AMTHRACENE BENZO(A)PYRENE BENZO(B)LUORANTHENE BENZO(B, H)DERVLENE BENZO(B, H)DERV	31000 340000 1700000 15 15 150 150 170000 1500 15	N N C C C C C C C C C C C C C C C C C C	24 250 22000 360000 3.5 3.5 10 3.5 35 120000 1100 11 160000 27000 120 0.47	(7)	NA N	NA N	NA N	NA N	NA N	NA N	NA N

ATTACHMENT 1

POSITIVE DETECT COMPARISON TO DIRECT CONTACT A HUMAN HEALTH RIL

TECY R SURFACE SOIL
TA ECTION OF GROUNDWATER CRITERIA
THIL JESSMENT - UXO 32
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LOCATION			USEPA Regio		U32SA09SB02	U32SA10SB01	U32SA10SB02	U32SA11SB01	U32SA11SB02		U32SA12SB01
SAMPLE 1D	Regional		Screening		U325A09SB0201	U32SA10SB0101	U32SA10SB0201	U32SA11SB0101	U32SA11SB0201	U32SA12SB0101	U32SA12SB0101-AVG
SAMPLE DATE	Screening	g	Levels ^(1,2)		20101027	20101028	20101027	20101028	20101028	20101028	20101028
SAMPLE CODE	Levels(1,2	*)	Protection of		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG
MATRIX	Residential	Soil	Groundwate	er	so	so	so	so	so	50	so
SAMPLE TYPE			SSLs		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION					NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX	1				SS	SS	SS	SS	SS	SS	SS
	1				1	1	1	1 1	1	1	1
TOP DEPTH							2	2	2	2	2
BOTTOM DEPTH	<u> </u>		l		2	2			Z		2
DIOXINS/FURANS (NG/KG)				-		1					
1,2,3,4,6,7,8,9-OCDD	15000	С	870_	-	NA NA	NA NA	NA	NA	NA	NA NA	NA NA
1,2,3,4,6,7,8,9-OCDF	15000	C	870	+-	NA NA	NA NA	NA	NA NA	NA	NA NA	NA NA
1,2,3,4,6,7,8-HPCDD	450	С	26	₩	NA NA	NA NA	NA	NA NA	NA	NA NA	NA NA
1,2,3,4,6,7,8-HPCDF	450	С	26	+	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,4,7,8,9-HPCDF	450	C	26	+ '	NA NA	NA	NA NA				
1,2,3,4,7,8-HXCDF	45	C	2.6	╀	NA	NA NA	NA	NA NA	NA	NA NA	NA NA
1,2,3,6,7,8-HXCDD	45	<u>c</u>	2.6	+	NA	NA NA	NA	NA NA	NA	NA NA	
1,2,3,6,7,8-HXCDF	45	C	2.6	+	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA
1,2,3,7,8,9-HXCDD	45	C	2,6	┼-	NA NA	NA	NA.	NA	NA NA	NA NA	NA NA
1,2,3,7,8-PECDF	150	C	8.7	+-	NA NA	NA.	NA NA	NA_		NA NA	NA NA
2,3,4,6,7,8-HXCDF	45	C	2.6	╀	NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA
2,3,4,7,8-PECDF	15	C	0.87	╀	NA	NA.	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,7,8-TCDD	4.5	<u>c</u>	0.26	1	NA	NA NA				NA NA	NA NA
2,3,7,8-TCDF	45	C	2.6	4-	NA NA	NA	NA NA	NA	NA		NA NA
TEQ	4.5	L C	0.26	+-	NA NA	NA	NA .	NA	NA NA	NA NA	
TEQ - HALFND	4.5	Ŀ	0.26	+	NA NA	NA NA	NA	NA NA	,NA	NA NA	NA NA
TOTAL HPCDD	94	C	. 9	_	NA	NA NA	NA	NA .	NA NA	NA	NA NA
TOTAL HPCDF	NC	├	NC NC	+	NA	NA NA	NA	NA		NA NA	NA NA
TOTAL HXCDD	NC	-	NC	╄	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA
TOTAL HXCDF	NC		NC	+	NA NA	NA	NA	NA .	NA NA		NA NA
TOTAL PECDF	NC	1	NC		l NA	l NA	NA NA	NA NA		NA NA	IVA
		+		$\overline{}$				414		NI O	NIA .
TOTAL TCDD	NC	=	NC	F	NA NA	NA NA	NA .	NA NA	NA NA	NA	NA NA
TOTAL TCDD TOTAL TCDF						NA NA		NA NA		NA	NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG)	NC NC		NC NC	E	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC	NC NC	<u>c</u>	NC NC 0.0013	E	NA NA 174	NA 77.7	NA NA 6,52	NA 25.5	NA NA 28.4	NA 14.8	NA 14.8
TOTAL TCDD TOTAL TCDF METALS (Mg/KG) ARSENIC BARLUM	NC NC 0.39 1500	N_	NC NC 0.0013 300	E	NA NA 174 NA	77.7 NA	NA NA 6.52 NA	NA 25.5 NA	NA NA 28.4 NA	NA 14.8 NA	NA 14.8 NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CADMIUM	NC NC	N_N	NC NC 0.0013 300 1.4		NA NA 174 NA NA	77.7 NA NA	NA NA 6,52 NA NA	NA 25.5 NA NA	NA NA 28.4 NA NA	NA	NA 14.8 NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM CHROMIUM	NC NC 0.39 1500 7 12000	N N N ⁽³⁾	0.0013 300 1.4 99000000	(3)	NA NA 174 NA NA	NA 77.7 NA NA NA	NA NA 6.52 NA NA	NA 25.5 NA NA NA	NA NA 28.4 NA NA NA	NA 14.8 NA NA NA	NA 14.8 NA NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LIEAD	NC NC 0.39 1500 7 12000 400	N N N ⁽³⁾	NC NC 0.0013 300 1.4 99000000	(3)	NA NA 174 NA NA NA NA	NA 77.7 NA NA NA NA NA	NA NA 6.52 NA NA NA	NA 25.5 NA NA NA NA	NA NA 28.4 NA NA NA	NA 14.8 NA NA NA	NA 14.8 NA NA NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY	NC NC 1500 7 12000 400 2.3	N N N ⁽³⁾ N N ⁽⁵⁾	NC NC 0.0013 300 1.4 99000000 14 0.03	(3)	NA NA 174 NA NA NA NA	NA 77.7 NA NA NA NA NA NA	NA NA S.52 NA NA NA NA	NA 25,5 NA NA NA NA NA NA	NA NA 28.4 NA NA NA NA	NA 14.B NA NA NA NA NA	NA 14.5 NA NA NA NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMILM CHROMIUM LEAD MERCURY SELENIUM	NC NC 1500 7 12000 400 2.3 39	N N ⁽³⁾ N N ⁽⁵⁾	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95	(3)	NA	NA 77.7 NA NA NA NA NA NA NA NA	NA NA 6.52 NA NA NA NA	NA 25.5 NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA	NA 14.8 NA NA NA NA NA NA	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC	NC NC 1500 7 12000 400 2.3	N N N ⁽³⁾ N N ⁽⁵⁾	NC NC 0.0013 300 1.4 99000000 14 0.03	(3)	NA NA 174 NA NA NA NA	NA 77.7 NA NA NA NA NA NA	NA NA S.52 NA NA NA NA	NA 25,5 NA NA NA NA NA NA	NA NA 28.4 NA NA NA NA	NA 14.B NA NA NA NA NA	NA 14.5 NA NA NA NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%)	NC NC 0.39 1500 7 12000 400 2.3 39 2300	N N ⁽³⁾ N N ⁽⁵⁾	NC NC 300 1.4 99000000 14 0.03 0.95 680	(3)	NA N	NA 77-7 NA NA NA NA NA NA NA NA NA N	NA NA NA S.5-2 NA	NA 2555 NA NA NA NA NA NA NA NA NA	NA NA 28,4 NA	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE	NC NC 0.39 1500 7 12000 400 2.3 39 2300	N N ⁽³⁾ N N ⁽⁵⁾	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680	(3)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA NA NA S.52 NA	NA 25.5 NA NA NA NA NA NA NA NA NA N	NA NA 28.4 NA	NA	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LIEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIOS	NC NC 0.39 1500 7 12000 400 2.3 39 2300	N N ⁽³⁾ N N ⁽⁵⁾	NC NC 300 1.4 99000000 14 0.03 0.95 680	(3)	NA N	NA 77-7 NA NA NA NA NA NA NA NA NA N	NA NA NA S.5-2 NA	NA 2555 NA NA NA NA NA NA NA NA NA	NA NA 28,4 NA	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG)	NC NC 1500 7 12000 400 2.3 39 2300 NC	N N N ⁽³⁾ N N ⁽⁵⁾	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC	(3)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA NA NA S1-52 NA	NA 2555 NA NA NA NA NA NA NA NA NA	NA NA 28.4 NA	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260	NC NC 0.39 1500 7 12000 400 2.3 39 2300	N N ⁽³⁾ N N ⁽⁵⁾	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC	(3)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA NA NA S.52 NA	NA 25.5 NA NA NA NA NA NA NA NA NA N	NA NA 28.4 NA	NA	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMILM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLUC AROMATIC HYDROCARBONS (UG/KG)	NC NC 0.39 1500 7 12000 400 2.3 39 2300 NC NC	N N N ⁽³⁾ N N ⁽⁵⁾ N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC	(4)	NA NA NA 172 NA	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) ZMETHYLMANTHALENE	NC N	N N N N N N N N N N N N N N N N N N N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC	(3)	NA N	NA 77.7 NA	NA NA NA S.52 NA	NA 25-85 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA	NA 14.6 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACCNAPHTHYLENE	NC N	N N N N N N N N N N N N N N N N N N N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 22000	(3)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACEDE	NC N	N N N ⁽³⁾ N N N N N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000	(3)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 2-5-5 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	NC NC 1500 1500 1500 1550 1550 1550 1550 155	N N N N N N N N N N N N N N N N N N N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 24 750 22000 360000 3.5	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5- NA	NA	NA 14:8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARKUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ANTHRACENE BAP EQUIVALENT-HALFND	NC N	N N N N N N N N N N N N N N N N N N N	NC N	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRIUM CADMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POES (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT-HALFND	NC NC 1500 1500 1500 1500 1500 1500 1500 150	N N N N N N N N N N N N N N N N N N N	NC NC 3000000000000000000000000000000000	(6)	NA N	NA 77,7 NA	NA N	NA 25-85 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) ACCHAPHTHYLNAPHTHALENE ACCHAPHTHYLNAPHTHALENE ACCHAPHTHYLNAPHTHALENE BAP EQUIVALENT	NC N	N N N N N N N N N N N N N N N N N N N	NC N	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRIUM CADMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE AACENAPHTHYLENE BAP EQUIVALENT	NC N	N N N ⁽³⁾ N N N N N N N C C	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 3.5 3.5 3.5 3.5 35	(6)	NA N	NA 7757 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5- NA	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	NC N	N N N N N N N N N N N N N N N N N N N	NC N	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARKUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BENZO(A)MITHRACENE BENZO(A)MITHRACENE BENZO(B)FLUORANTHENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE	NC N	N N N N N N N N N N N N N N N N N N N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 3.5 3.5 120000 3.5 3.5 35 350 350	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POES (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z.METHYLNAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP	NC NC 1500 1500 1500 1500 1500 1500 1500 1550 NC	N N N N N N N N N N N N N N N N N N N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 3.5 3.5 3.5 120000 350 1100 0.5 NC	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-85 NA NA	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARKUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLUC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)HYDRENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE	NC N	N N N N N N N N N N N N N N N N N N N	NC N	(d) (e)	NA	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRIUM CADMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B)-LUORANTHENE BENZO(G)-LUORANTHENE DIBENZO(K)-LUORANTHENE	NC N	N N N N N N N N N N N N N N N N N N N	NC NC 0.00.13 300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 3500000 3.5 3.5 3.5 3.5 120000 350 1100 11 1600000	(6)	NA N	NA 77,7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5- NA	NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2.METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUI	NC N	N N N N N N N N N N N N N N N N N N N	NC N	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA N	NA 14:8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(G,H,I)PERVIENE	NC N	N N N N N N N N N N N N N N N N N N N	NC N	(6)	NA	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14:8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POES (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE BAP EQUIVALENT-HALFND BENZO(BAPHTHYLENE BAP EQUIVALENT-HALFND BENZO(BAPHTHYLENE BENZO(BYNTENE BENZO(BYNTENE BENZO(BYNTENE BENZO(BYNTENE BENZO(BYNTENE BENZO(G,H,I)PERYLENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE	NC NC 1500 1500 1500 1500 1500 1500 1500 150	N N N N N N N N N N N N N N N N N N N	NC NC 0.0013 300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 360000 3.5 3.5 3.5 120000 350 1100 1100 120000 27000 120 0.47	(6)	NA N	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5- NA	NA	NA 14:8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N
TOTAL TCDD TOTAL TCDF METALS (MG/KG) ARSENIC BARRUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(G,H,I)PERVIENE	NC N	N N N N N N N N N N N N N N N N N N N	NC N	(6)	NA	NA 77.7 NA NA NA NA NA NA NA NA NA N	NA N	NA 25-5 NA NA NA NA NA NA NA NA NA N	NA	NA 14.8 NA NA NA NA NA NA NA NA NA N	NA 14.8 NA NA NA NA NA NA NA NA NA N

ATTAC ""ENT 1

POSITIVE DETECT 9 SURFACE SOIL
DIRECT CONTACT AI ::CTION OF GROUNDWATER CRITERIA
HUMAN HEALTH RIS. _.ESSMENT - UXO 32
PAGE 5 OF 10 COMPARISON TO DIRECT CONTACT AI

LOCATION	Adjusted II	SEDA	USEPA Regiona	1		U32SA12SB02		U32SA13SB01	U32SA13SB02	
SAMPLE ID	Regiona		Screening	U32SA12SB0101-D	U32SA12SB0201	U32SA12SB0201-AVG	U32SA12SB0201-D	U32SA13SB0101	U32SA13SB0201	U32SA14SB0101
SAMPLE DATE	Screenin		Levels ^(1,2)	20101028	20101027	20101027	20101027	20101027	20101027	20101028
SAMPLE CODE	Levels ^{(1,1}		Protection of	DUP	ORIG	20101027 AVG	20101027 DUP	NORMAL	NORMAL	
MATRIX	Residential		Groundwater	I .		1				ORIG
SAMPLE TYPE	Residential	. 50	SSLs	SO NORMAL	50	SO	\$0	SO	50	SO
		- 1	3323		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION		- 1		NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX				SS	SS	SS	SS	SS	SS	SS
TOP DEPTH		ļ		1	1	1 1	1	1	1	1
BOTTOM DEPTH	ŀ	- 1		2	2	1 2 1	2	2	2	2
DIOXINS/FURANS (NG/KG)	,			-h	· · · · · · · · · · · · · · · · · · ·					
1,2,3,4,6,7,8,9-OCDD	15000	C	870	NA NA	NA	NA NA	NA NA	NA	NA NA	NA
1,2,3,4,6,7,8,9-OCDF	15000	. С	870	NA NA	NA	NA NA	NA	NA	NA NA	NA NA
1,2,3,4,6,7,8-HPCDD	450	С	26	NA	NA	NA NA	NA	NA	NA	NA
1,2,3,4,6,7,8-HPCDF	450	С	26	NA	NA NA	NA	NA	NA	NA	NA
1,2,3,4,7,8,9-HPCDF	450	С	26	NA .	NA	NA	NA	NA NA	NA	NA
1,2,3,4,7,8-HXCDF	45	С	2.6	NA NA	NA	NA	NA	NA .	NA	NA .
1,2,3,6,7,8-HXCDD	45	С	2.6	. NA	NA NA	NA	NA	NA	NA NA	NA
1,2,3,6,7,8-HXCDF	45	C	2.6	. NA	NA	NA NA	NA	NA	NA NA	NA
1,2,3,7,8,9-HXCDD	45	C	2.6	NA NA	NA	NA NA	NA	NA	NA	NA
1,2,3,7,8-PECDF	150	С	8.7	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA
2,3,4,6,7,8-HXCDF	45	C	2.6 0.87	. NA	NA NA	NA NA	NA	NA NA	NA_	NA
2,3,4,7,8-PECDF 2,3,7,8-TCDD	4.5	C		NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,7,8-TCDF	4.5	C	0.26 2.6	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TEQ	4.5	c	0.26	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TEQ - HALFND	4.5	- -	0.26	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HPCDD	94	1 2 1	9	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HPCDF	NC	1-1	NC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HXCDD	NC	+	NC NC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HXCDF	NC NC	+	NC	NA NA	NA NA	NA NA	NA NA	NA .	NA NA	NA NA
TOTAL PECDF	NC	+	NC	NA.	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDD	NC	+	NC	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDF	NC	\Box	NC	NA	NA NA	NA NA	NA	NA	NA	NA .
METALS (MG/KG)										
ARSENIC	0.39	C	0.0013	NA	74.3	74.3	NA	8.79	51.9	137
BARIUM	1500	N	300	NA	NA	NA	NA NA	NA	NA	NA
CADMIUM	7	N	1.4	NA	NA NA	NA	NA	NA	NA	_ NA
CHROMIUM	12000	N(3)	99000000 (3	NA	NA NA	NA	NA .	NA	NA .	NA NA
LEAD	400	N	14 (4	NA NA	NA NA	NA NA	NA	NA	NA	NA
MERCURY	2.3	N ⁽⁵⁾	0.03	NA	NA	NA NA	NA	NA	NA NA	NA .
SELENIUM	39									
		N	0.95	NA NA	NA	NA NA	NA	NA	NA .	. NA
ZINC	2300	N N	0.95 680	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
MISCELLANEOUS PARAMETERS (%)	2300		680	NA	NA .	NA	NA .	NA	NA	NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE	2300 NC		680 NC	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS	2300		680	NA	NA .	NA	NA .	NA	NA	NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG)	NC NC	N	NC NC	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260	2300 NC		680 NC	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)	2300 NC NC	C	NC NC NC 24	NA NA NA 18 J	NA NA NA 39.9 U	NA NA NA 40 U	NA NA NA 40.1 U	NA NA NA 39.9 U	NA NA NA 41.7 U	NA NA NA 44,3 U
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) [AROCLOR-1250 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) [2-METHYLNAPHTHALENE	2300 NC NC 220 31000	C	680 NC NC 24	NA NA NA NA NA NA NA	NA NA NA 39.9 U	NA NA NA NA NA NA NA	NA NA NA 40.1 U	NA NA NA 39.9 U	NA NA NA A1.7 U NA	NA NA NA 44.3 U
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KS) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE	2300 NC NC 220 31000 340000	C N N(6)	680 NC NC 24 750 22000 (6)	NA NA NA 18 J NA NA NA	NA NA NA 39.9 U NA NA NA	NA NA NA A0 U NA NA NA NA	NA NA NA 40.1 U NA NA	NA NA NA 39.9 U NA NA	NA NA NA NA 41.7 U NA NA	NA NA NA 44.3 U NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE	2300 NC NC 220 31000 340000 1700000	N	750 22000 (6)	NA NA NA NA NA NA NA NA NA	NA NA NA 39.9 U NA NA NA NA	NA NA NA NA NA NA NA NA	NA NA NA 40.1 U NA NA NA NA	NA NA NA 39.9 U NA NA NA NA	NA NA NA NA 41.7 U NA NA NA NA	NA NA NA 44.3 U NA NA NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHIHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	2300 NC NC 220 31000 340000 1700000 15	N C N N (6) N C C	750 22000 (6) 360000 3.5	NA	NA NA NA 39.9 U NA NA NA NA NA	NA NA NA NA NA NA NA NA NA	NA NA NA 40.1 U NA NA NA NA	NA NA NA 39.9 U NA NA NA NA NA	NA NA NA NA 41.7 U NA NA NA NA NA	NA NA NA 144.3 U NA NA NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KS) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT	2300 NC NC 220 31000 340000 1700000 15 15	N	750 22000 (6) 360000 3.5 3.5	NA NA NA 18 J NA NA NA NA NA NA	NA NA NA 39.9 U NA NA NA NA NA NA NA	NA NA NA 40 U NA NA NA NA NA NA NA	NA NA NA 40.1 U NA NA NA NA NA NA	NA NA NA 39.9 U NA NA NA NA NA NA	NA NA NA NA 41.7 U NA NA NA NA NA NA NA	NA NA NA 14.3 U NA NA NA NA NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT-HALFND BENZO(AANTHRACENE	2300 NC NC 220 31000 340000 1700000 15 15 150	N C N N C C C C	750 22000 (6) 360000 3.5 3.5	NA	NA NA NA 39.9 U NA NA NA NA NA NA NA NA NA	NA	NA NA NA A0.1 U NA	NA NA NA 39.9 U NA	NA NA NA 11.7 U NA	NA NA NA A4.3 U NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KS) (AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHITHALENE ACENAPHITHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT-HALFND BENZO(A)ANHTRACENE BENZO(A)ANHTRACENE	2300 NC NC 220 31000 340000 1700000 15 15 15 150 150	N C C C C C C	750 22000 (6) 360000 3.5 3.5 10 3.5	NA	NA N	NA N	NA NA NA 40.1 U NA	NA N	NA N	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KS) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT HALFND BENZO(A)MITHRACENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PYRENE	2300 NC NC 220 31000 340000 1700000 15 15 15 150 150	N	750 22000 (6) 360000 3.5 3.5 10 3.5 35	NA N	NA N	NA N	NA NA NA NA A0.1 U NA	NA N	NA NA NA NA A1.7 U NA	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT HALFND BAP EQUIVALENT HALFND BAP EQUIVALENTHALFND BAP EQUIVALENTHALFND BAP EQUIVALENTHALFND BAP EQUIVALENTHALFND BAP COLVINALENTHALFND BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE	2300 NC NC 220 31000 340000 1700000 15 15 150 150 170000	N	750 (6) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7) 3.5 (7	NA N	NA N	NA N	NA NA NA A0.1 U NA	NA N	NA NA NA NA A1.7 U NA	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)MITHRACENE BENZO(A)MITHRACENE BENZO(A)PYERIE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE	2300 NC NC 220 31000 340000 1700000 15 15 15 150 170000 170000 1500	N C N N C C C C C C C C C C C C C C C C	750 22000 (6) 360000 3.5 10 3.5 10 3.5 120000 (7)	NA N	NA N	NA N	NA N	NA NA NA 39.9 U NA	NA NA NA 11.7 U NA	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BENZO(A)PYRENE BENZO(B)-LUORANTHENE BENZO(K)-LUORANTHENE CHRYSENE	2300 NC NC 220 31000 340000 1700000 15 15 150 1500 15000	N N N N N N N N N N N N N N N N N N N	750 22000 (6) 3,5 3,5 120000 (7) 350 1100 1100 1100 1100 1100 1100 1100	NA N	NA N	NA N	NA N	NA N	NA N	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENTHALFND BENZO(A)MITHRACENE BENZO(A)MITHRACENE BENZO(A)PYERIE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE	2300 NC NC 220 31000 340000 1700000 15 15 15 150 170000 170000 1500	N C N N C C C C C C C C C C C C C C C C	750 22000 (6) 360000 3.5 10 3.5 10 3.5 120000 (7)	NA N	NA N	NA N	NA N	NA NA NA 39.9 U NA	NA NA NA 11.7 U NA	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENTHALEND BENZO(A)ANTHRACENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE BENZO(B)FLUORANTHENE GENZO(B)FLUORANTHENE GENZO(B)FLUORANTHENE GENZO(K)FLUORANTHENE DENZO(K)FLUORANTHENE DENZO(K)FLUORANTHENE	2300 NC NC NC 220 31000 340000 1700000 15 15 15 150 15 150 1500 150		750 22000 (6: 360000) 3.5 3.5 3.5 120000 (7: 350000) 11100 11 1600000	NA	NA N	NA N	NA N	NA N	NA	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT HALFND BAP EQUIVALENT HALFND BENZO(A)MYRENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B)FLUORANTHENE BENZO(CB)FLUORANTHENE BENZO(CK)FLUORANTHENE BENZO(CK)FLUORANTHENE BENZO(CK)FLUORANTHENE BENZO(CK)FLUORANTHENE BENZO(CK)FLUORANTHENE BENZO(CK)FLUORANTHENE BENZO(CK)FLUORANTHENE FLUORANTHENE FLUORANTHENE	2300 NC NC 220 31000 340000 1700000 15 15 15 150 1500 15000 15000 15	N N N N N C C C C C C C C C C C C C C C	750 22000 (6) 3.5 3.5 10 3.5 35 120000 (7) 350 110 11 160000 27000	NA N	NA N	NA	NA N	NA N	NA	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KS) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT HALFND BENZO(A)ANTHRACENE BENZO(A)ANTHRACENE BENZO(G)H, I)PERYLENE BENZO(G,H, I)PERYLENE BENZO(G,H, I)DERNYLENE BENZO(G,H, I)DERNYLENE BENZO(C,H, I)DERNYLENE BENZO(C,H, I)DERNYLENE BENZO(C,H, I)DERNYLENE BENZO(C,H, I)DERNYLENE BENZO(C,H, I)DERNYLENE BENZO(C,H, I)DERNYLENE LIGHTERSENE	2300 NC NC 31000 340000 1700000 15 15 15 150 1500 1500 1500 1500 230000	N N N N N N N N N N N N N N N N N N N	750 22000 (6: 360000) 3.5 3.5 3.5 120000 (7: 350000) 11100 11 1600000	NA	NA N	NA N	NA N	NA N	NA	NA N
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METH/LINAPITHALENE ACENAPITHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENTHALFIND BENZO(A/MAINTHRACENE BENZO(A/MAINTHRACENE BENZO(B/FLUORANTHENE BENZO(B/FLUORANTHENE CHRYSENE DENZO(B/FLUORANTHENE CHRYSENE DIBENZO(A,H)AMTHRACENE ENZO(G,H,1)PERYLENE ENZO(G,H,1)PERYLENE ENZO(G,H,1)MITHRACENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORENE	2300 NC NC NC 220 31000 340000 15 15 150 150 15000 15000 1500 230000 230000		750 22000 (6) 3.5 3.5 10 0 3.5 120000 (7) 110 11 160000 27000 120	NA N	NA N	NA	NA	NA N	NA	NA N

ATTACHMENT 1

POSITIVE DETECT

9 SURFACE SOIL
:CTION OF GROUNDWATER CRITERIA
-SSMENT - UXO 32 COMPARISON TO DIRECT CONTACT AI HUMAN HEALTH RIS 2SSI PAGE 6 OF 10

LOCATION	Adjusted US	SEPA	USEPA Regiona	all	U32SA14SB01		U32SA14SB02	U32SBS0301	U32SBS0401	U32SBS0701	U32SBS0901
SAMPLE ID	Regiona		Screening		32SA14SB0101-AVG	U32SA14SB0101-D	U32SA14SB0201	U325BS030101	U32SBS040101	U32SBS070101	U325BS090101
SAMPLE DATE	Screenin		Levels ^(1,2)	1	20101028	20101028	20101028	20101201	20101201	20101201	20101201
SAMPLE CODE	Levels ^{(1,}	,2)	Protection of	f	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	Residential		Groundwater	r	so	so	so	so	50	so	so
SAMPLE TYPE			SSLs		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION					NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	UNDER CAP	UNDER CAP	UNDER CAP	UNDER CAP
SUBMATRIX	i			- 1	SS	SS	55	SS	SS	SS	SS SS
TOP DEPTH				i	1	1	1	0	0	0	0
BOTTOM DEPTH	ł		1	ł	2	2	2	1	1		1 1
DIOXINS/FURANS (NG/KG)	1		l					1		1	1
1,2,3,4,6,7,8,9-OCDD	15000	Τċ	870		NA	NA	NA	NA NA	NA NA	NA NA	NA I
1,2,3,4,6,7,8,9-OCDF	15000	C	870	\neg	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA NA
1,2,3,4,6,7,8-HPCDD	450	С	26		NA	NA	NA	NA	NA NA	NA	NA NA
1,2,3,4,6,7,8-HPCDF	450	n	26		NA	NA .	NA	NA	NA NA	NA	NA
1,2,3,4,7,8,9-HPCDF	450	n	26		NANA	NA	NA	NA	NA NA	NA	NA
1,2,3,4,7,8-HXCDF	45	C	2.6	_	NA	NA	NA	NA	NA	NA NA	NA
1,2,3,6,7,8-HXCDD	45	<u></u>	2,6	-	NA	NA	NA NA	NA NA	NA	NA	NA
1,2,3,6,7,8-HXCDF	45	C	2.6		. NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
1,2,3,7,8,9-HXCDD 1,2,3,7,8-PECDF	45 150	C	2.6 8.7		NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,4,6,7,8-HXCDF	45	C	2.6	+	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,4,7,8-PECDF	15	15	0.87	-	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,7,8-TCDD	4.5	Č	0.26	\top	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,7,8-TCDF	45	C	2.6		NA	NA	NA	NA	NA NA	NA NA	NA NA
TEQ	4.5	С	0.26		NA	NA	NA NA	NA	NA	NA	NA NA
TEQ - HALFND	4.5	С	0.26		NA	NA	NA	NA	NA NA	NA	NA NA
TOTAL HPCDD	94	C	9		NA	NA NA	NA	NA .	NA	, NA	NA
TOTAL HPCDF	NC	1	NC		NA	NA NA	NA NA	NA	NA	NA	NA
TOTAL HXCDD	NC NC	\perp	NC NC	_	NA	NA	NA NA	NA NA	NA	NA NA	NA
TOTAL HXCDF TOTAL PECDF	NC NC	+	NC NC		NA NA	NA.	NA NA	NA NA	NA NA	NA NA	NA
TOTAL TCDD	NC NC	+	NC NC	- -	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDF	NC NC	+	NC NC	+	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
METALS (MG/KG)	1		,,,,,		1			···· '''\ ·- · ——	I—————————————————————————————————————		
ARSENIC	0.39	С	0.0013		155	173	350	5.5 1	5.2 J	37 J	110 J
BARIUM	1500	N	300		NA	NA .	NA	NA	NA	NA	NA NA
CADMIUM	7	N	1.4		NA	NA	NA_	NA	NA	NA NA	NA
CHROMIUM	12000	N ⁽³⁾		(3)	NA	NA	NA	NA NA	NA	NA	NA
LEAD	400	N	14	(4)	NA	NA NA	NA	16	5.3	5.7	140
MERCURY	2.3	N ⁽⁵⁾	0.03		NA	NA	NA NA	NA	NA	NA NA	NA NA
SELENIUM	39	N	0.95	-	NA	. NA	NA	NA NA	NA NA	NA	NA NA
ZINC	2300	N	680		NA.	, NA	NA	NA NA	. NA	NA	NA NA
MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE	NC	$\overline{}$	NC		NA I	NA	NA .	18	9.3	13	12
TOTAL SOLIDS	NC NC	+	NC NC		NA NA	NA NA	NA NA	NA NA	9.3 NA	NA	NA NA
PCBS (UG/KG)	I IIC		I INC I			NA .	INA	11/4	110	11/2	1475
AROCLOR-1260	220	С	24		44.3 U	NA	11.9 J	5.8 J	10 J	38 U	11000
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)											
2-METHYLNAPHTHALENE	31000	N	750		NA	NA NA	NA NA	NA .	NA _	NA	NA
ACENAPHTHYLENE	340000	N ⁽⁶⁾	22000	(6)	NA	NA	NA	NA	NA .	NA	NA .
ANTHRACENE	1700000	N	360000		NA	NA	NA NA	NA	NA	NA NA	NA
BAP EQUIVALENT	15	C	3.5	-	NA	NA NA	NA NA	NA	NA .	NA	NA
BAP EQUIVALENT-HALFND	15	<u>c</u>	3.5		NA	NA	. NA	NA	NA	NA	NA NA
BENZO(A)ANTHRACENE	150	C	10	-	NA .	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
BENZO(A)PYRENE BENZO(B)FLUORANTHENE	15 150	C	3.5 35		NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
BENZO(G,H,1)PERYLENE	170000	N(7)	120000	(7)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
BENZO(K)FLUORANTHENE	1500	C	350	-	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
CHRYSENE	15000	č	1100		NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
DIBENZO(A,H)ANTHRACENE	15	c	11	\dashv	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
FLUORANTHENE	230000	N	160000	\dashv	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
FLUORENE	230000	N	27000	\neg	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
INDENO(1,2,3-CD)PYRENE	150	С	120		NA NA	NA	NA NA	NA NA	NA	NA	NA NA
NAPHTHALENE	3600	C	0.47		NA	NA	NA	NA	NA NA	NA NA	NA NA
PHENANTHRENE	170000	N ⁽⁷⁾	120000 ((7)	NA	NA	NA	NA	NA NA	NA	NA
	170000	N	120000	\neg	NA .	NA NA	NA.	NA .	NA.	NA NA	NA NA
PYRENE	170000	IN	120000 [INA	IVA	IVA	INA .	INA	NA .	IVA

ATTAC****ENT 1 POSITIVE DETECT 3 SURFACE SOIL COMPARISON TO DIRECT CONTACT AI ::CTION OF GROUNDWATER CRITERIA HUMAN HEALTH RIS. ... ZESMENT - UXO 32 PAGE 7 OF 10

			USEPA Region	nal		U32SBS1301		U325BS1512	U32SO01	U32SO02	U32SO03
SAMPLE ID	Regiona		Screening		U32SBS130101	U32SBS130101-AVG	U32SBS130101-D	U32SBS151201	U32SO010101	U3250020101	U3250030101
SAMPLE DATE	Screenin		Levels ^(1,2)		20101201	20101201	20101201	20101201	20100916	20100916	20100916
SAMPLE CODE	Levels ^(1,)		Protection o		ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	Residential	Soil	Groundwate	er	SO	so	so	so	SO SO	SO SO	SO SO
SAMPLE TYPE	Į.		SSLs		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION				-	UNDER CAP	UNDER CAP	UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX					SS	SS	SS	SS	SS	ss	SS
TOP DEPTH					0	0	0	1 1	0	0	0
					1	1	1	2	0.5	0.5	0.5
BOTTOM DEPTH			L			-		·	9.5		
DIOXINS/FURANS (NG/KG) 1,2,3,4,6,7,8,9-OCDD	15000	C.	870	П	NA	NA NA	NA NA	I NA	I NA	NA NA	NA NA
1,2,3,4,6,7,8,9-OCDF	15000	Č	870	Ħ	NA .	NA	NA	NA NA	NA	NA NA	NA NA
1,2,3,4,6,7,8-HPCDD	450	Ċ	26	П	NA	NA_	NA	NA	NA NA	NA NA	NA .
1,2,3,4,6,7,8-HPCDF	450	С	26		NA	NA NA	. NA	NA	NA	NA	NA NA
1,2,3,4,7,8,9-HPCDF	450	C	26		NA	NA	NA NA	_NA	NA.	NA .	NA .
1,2,3,4,7,8-HXCDF	45	С	2.6		NA	NA NA	NA NA	NA	NA NA	NA	NA
1,2,3,6,7,8-HXCDD	45	C	2.6	\perp	NA	NA	NA NA	NA NA	NA	NA	NA
1,2,3,6,7,8-HXCDF	45	.c.	2.6	Н	ŅA	NA	NA	NA	NA NA	NA NA	NA NA
1,2,3,7,8,9-HXCDD	45	C	2.6	┰	NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA
1,2,3,7,8-PECDF	150	C	8.7	┰	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA NA
2,3,4,6,7,8-HXCDF	45	C	2.6	╁╼┼	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,4,7,8-PECDF	15	C	0.87	┼┤	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,7,8-TCDD	4,5 45	1 c	2.6	+	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
2,3,7,8-TCDF TEO	4.5	l c	0.26	++	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TEQ - HALFND	4.5	T c	0.26	++	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HPCDD	94	l c	9	⇈	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HPCDF	NC	+ -	NC	1	NA NA	NA NA	NA	NA	NA NA	NA	NA NA
TOTAL HXCDD	NC		NC	\Box	NA NA	NA NA	NA	NA .	NA .	NA .	NA NA
TOTAL HXCDF	NC		NC	П	NA	NA	NA NA	NA NA	NA	NA NA	NA
TOTAL PECDF	NC		NC		NA	NA	NA	NA	NA	NA	NA NA
TOTAL TCDD	NC NC		NC	1.1	NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDF	NC	丄	NC	1_1	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
METALS (MG/KG)				_			42.2	0.1	20.0.7	422.1	229.7
ARSENIC	0.39	C	0.0013		32 J	22.5	13)	8 J	30.8 J	423 J	338 J
ARSENIC BARIUM	1500	N	300		NA	NA .	NA	NA	NA	NA	NA NA
ARSENIC BARIUM CADMIUM	1500 7	N	300 1.4	(3)	NA NA	NA NA	NA NA	NA NA	NA 0.499 U	NA 0.503 U	NA 0.0313 B
ARSENIC BARIUM CADMIUM CHROMIUM	1500 7 12000	N N	300 1.4 99000000	(3)	NA NA NA	NA NA NA	NA NA NA	NA NA NA	NA 0.499 U NA	NA 0.503 U NA	NA 0.0313 B NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD	1500 7 12000 400	N N(3) N	300 1.4 99000000 14	(3)	NA NA NA 52	NA NA NA 63.5	NA NA NA 75	NA NA NA 9,4	NA 0.499 U NA 11.4 J	NA 0.503 U NA 50.7 J	NA 0.0313 B NA 141 J
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY	1500 7 12000 400 2.3	N N ⁽³⁾ N N ⁽⁵⁾	300 1.4 99000000 14 0.03	(3)	NA NA NA 52 NA	NA NA NA 63.5	NA NA NA 75 NA	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM	1500 7 12000 400 2.3 39	N N ⁽³⁾ N N ⁽⁵⁾	300 1.4 99000000 14 0.03 0.95	(3)	NA NA NA 52 NA NA	NA NA NA 63.5 NA	NA NA NA 75 NA NA	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA NA	NA 0.503 U NA 50.7 J	NA 0.0313 B NA 141 J
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC	1500 7 12000 400 2.3	N N ⁽³⁾ N N ⁽⁵⁾	300 1.4 99000000 14 0.03	(3)	NA NA NA 52 NA	NA NA NA 63.5	NA NA NA 75 NA	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA NA	NA 0.0313 B NA 141 J NA NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%)	1500 7 12000 400 2.3 39 2300	N N ⁽³⁾ N N ⁽⁵⁾	300 1.4 99000000 14 0.03 0.95 680	(3)	NA NA NA 52 NA NA NA	NA NA NA 63.5 NA NA	NA NA NA 75 NA NA	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA NA	NA 0.503 U NA 50.7 J NA NA	NA 0.0313 B NA 141 J NA NA NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE	1500 7 12000 400 2.3 39	N N ⁽³⁾ N N ⁽⁵⁾	300 1.4 99000000 14 0.03 0.95	(3)	NA NA NA 52 NA NA	NA NA NA 63.5 NA	NA NA NA 75 NA NA NA	NA NA NA 9.4 NA NA	NA 0.499 U NA 11.4 J NA NA	NA 0.503 U NA 50.7 J NA NA	NA 0.0313 B NA 141 7 NA NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS	1500 7 12000 400 2.3 39 2300	N N ⁽³⁾ N N ⁽⁵⁾	300 1.4 99000000 14 0.03 0.95 680	(3)	NA NA NA 52 NA NA NA	NA NA NA 63.5 NA NA	NA NA NA NA Z5 NA NA NA NA NA NA NA NA	NA NA NA 9.4 NA NA NA	NA 0.499 U NA 11.4 J NA NA NA	NA 0.503 U NA 50.7 J NA NA NA NA	NA 0.0313 B NA 141 7 NA NA NA NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260	1500 7 12000 400 2.3 39 2300	N N ⁽³⁾ N N ⁽⁵⁾	300 1.4 99000000 14 0.03 0.95 680	(3)	NA NA NA 52 NA NA NA	NA NA NA 63.5 NA NA	NA NA NA 75 NA NA NA 11	NA NA NA 9.4 NA NA NA	NA 0.499 U NA 11.4 J NA NA NA	NA 0.503 U NA 50.7 J NA NA	NA 0.0313 B NA 141 J NA NA NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIÜM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG)	1500 7 12000 400 2.3 39 2300 NC NC	N N(3) N N(5) N N	300 1.4 99000000 14 0.03 0.95 680 NC NC	(3)	NA N	NA NA NA 63.5 NA NA NA NA 12 NA	NA N	NA NA NA 9.4 NA NA NA NA NA NA NA NA NA 11	NA 0.499 U NA 11.4 J NA NA NA NA 22.7 J	NA 0.503 U NA 50.7 J NA NA NA NA 90	NA 0.0313 B NA 141 J NA NA NA NA NA NA 22.2 J
ARSENIC BARRIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLAMPHTHALENE	1500 7 12000 400 2.3 39 2300 NC NC 220	N N(3) N N(5) N N N C	300 1.4 99000000 14 0.03 0.95 680 NC NC	(3)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TIOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000	N N(3) N N(5) N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 24	(3)	NA N	NA N	NA N	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACEME	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 310000 1700000	N (3) N (7) N (8) N (8) N (9) N (10)	300 1.4 99000000 14 0.03 0.95 680 NC NC 24	(3)	NA N	NA N	NA N	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMPAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	1500 7 12000 400 2.3 39 2300 NC NC S220 31000 340000 1700000 15	N (3) N (7) N (8) N (8) N (9) N (10)	300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5	(3)	NA N	NA	NA N	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA NA NA NA NA NA NA NA NA 240	NA 0.0313 B NA 141 J NA 188
ARSENIC BARIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TIOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACEMAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 360000 3.5 3.5	(3)	NA	NA N	NA N	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA S NA NA S S S S	NA 0.503 U NA 50.7 J NA 240 240	NA 0.0313 B NA 141 J NA 180 NA NA
ARSENIC BARRIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE 10TAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLAMPHTHALENE ACEMAPHTHYLENE BAP EQUIVALENT	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 15 15	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 3.5	(3)	NA N	NA	NA N	NA N	NA 0.499 U NA 11.4 J NA NA NA NA NA NA NA S NA S S S S S S S	NA 0.503 U NA 50.7 J NA NA NA NA NA NA NA A A A NA NA NA NA	NA 0.0313 B NA 141 7 NA NA NA NA NA NA 188 NA
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ANTHRACENE BAP EQUIVALENT	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15 15 15	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 360000 3.5 10 3.5	(3)	NA	NA NA NA NA O3.5 NA	NA N	NA NA NA 9.4 NA	NA 0.499 U NA 11.4 J NA NA NA NA NA NA NA NA S S S S S S S S	NA 0.503 U NA 50.7 J NA NA NA NA NA NA NA NA 240 NA	NA 0.0313 B NA 141 J NA 180 NA NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLMAPHTHALENE ACEMAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT-HALFND BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)PURENE	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15 15 15 150	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 10 3.5 3.5	(6)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA NA NA NA NA NA NA S NA S S S S S S S	NA 0.503 U NA 50.7 J NA NA NA NA NA NA NA A A A NA NA NA NA	NA 0.0313 B NA 141 J NA NA NA NA NA NA NA NA NA 188 88 122.2 J NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLMAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT HALFND BERDZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B)FILUDRANTHENE BENZO(B)FILUDRANTHENE BENZO(B)FILUDRANTHENE BENZO(B)FILUDRANTHENE	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1700000 15 15 150 150 170000	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 24 22000 360000 3.5 3.5 3.5 3.5 3.5 3.5 3.5	(6)	NA N	NA N	NA N	NA NA NA 9.4 NA NA NA NA NA NA 18 NA 11 J NA	NA 0.499 U NA 11.4 J NA NA NA NA NA NA NA NA NA S S S S S S	NA 0.503 U NA 50.7 J NA NA NA NA NA NA NA NA NA 240 NA	NA 0.0313 B NA 141 J NA NA NA NA NA NA NA NA 180 NA
ARSENIC BARIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) RAOCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACEMAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B)FLUGRANTHENE BENZO(B)FLUGRANTHENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE	1500 7 12000 400 2.3 39 2300 NC NC 12000 170000 150000 1500000 1500000 1500000 1500000 15000000 1500000000	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 360000 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	(6)	NA N	NA N	NA N	NA NA NA 9.4 NA NA NA NA NA NA NA NA 11 J NA	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA NA NA NA NA NA NA NA NA 180 NA
ARSENIC BARIUM CAROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE 107AL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLAMPHTHALENE ACEMAPHTHYLENE ANTHRACENE BAP EQUIVALENT	1500 7 12000 400 2.3 39 2300 NC NC 1220 31000 1700000 155 150 1700000 15500 150001 1500001	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 360000 3.5 3.5 3.5 10 3.5 120000 350 110000	(6)	NA N	NA N	NA N	NA NA NA 9.4 NA NA NA NA NA NA 18 NA 11 J NA	NA 0.499 U NA 11.4 J NA NA NA NA NA NA NA NA NA S S S S S S	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA NA NA NA NA NA NA NA NA 180 NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACEMAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EGUIVALENT BAP EG	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 340000 1,700000 15 15 150 1500 15000 15000	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 10 3.5 3.5 120000 350 110000	(6)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 7 NA NA NA NA NA 180 180 NA 180 180 NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLINAPHTHALENE ACEMAPHTHYLENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT-HALFND BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G,H,I)PFRYLENE BENZO(G,H,I)PFRYLENE BENZO(SFLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE BENZO(K)FLUORANTHENE	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 1700000 15 15 150 170000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 10 3.5 120000 350 110000 111	(6)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLAMPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT HALFND BERNZO(A)MATHENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE DIBENZO(A,H)ANTHRACENE BIENZO(A,H)ANTHRACENE DIBENZO(A,H)ANTHRACENE	1500 7 12000 400 2.3 39 2300 NC NC NC 31000 340000 1,700000 15 15 150 150 1500 1500 1500 1500	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 22 22000 360000 3.5 3.5 10 3.5 3.5 120000 350 1100 1110 1160000 27000	(6)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 750.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARTIUM CADMIUM CHROMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-PIETHYLMAPHTHALENE ACENAPHTHYLENE AANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)PYRENE BENZO(B)HUGRANTHENE BENZO(B,HUGRANTHENE CHRYSENE DENZO(B,HUGRANTHENE CHRYSENE CHRYSENE DIBENZO(A,H)ANTHRACENE ELUGRANTHENE CHRYSENE DIBENZO(A,H)ANTHRACENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE FLUORANTHENE	1500 7 12000 400 2.3 39 2300 NC NC 220 31000 1700000 15 15 150 170000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC NC 24 750 22000 360000 3.5 1.0 3.5 3.5 120000 350 11100 1110000 27000 27000	(6)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA 11.4 J NA NA NA NA NA 92 24.7 J NA NA NA NA NA NA NA NA 360 U NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLAMPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT HALFND BERNZO(A)MATHENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE BENZO(K)FILUDRANTHENE DIBENZO(A,H)ANTHRACENE BIENZO(A,H)ANTHRACENE DIBENZO(A,H)ANTHRACENE	1500 7 12000 400 2.3 39 2300 NC NC 12000 170000 1700000 15 15 150 170000 155 155 230000 230000 230000 230000	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 22000 360000 3.5 3.5 3.5 3.5 120000 350 1100 1110000 120000 120000 120000	(3) (4) (6) (7)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA
ARSENIC BARIUM CADMIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1560 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) POLYCYCL AROMATIC HYDROCARBONS (UG/KG) POLYCYCL AROMATIC HYDROCARBONS (UG/KG) POLYCYCL HYDROCARBONS (UG/KG) POLYCYCL HYDROCARBONS (UG/KG) POLYCYCL HYDROCARBONS (UG/KG) POL	1500 7 12000 400 2.3 39 2300 NC NC 7 220 31000 340000 1500000 15 15 15 150 155 150 150 15	N N N N N N N N N N N N N N N N N N N	300 1.4 99000000 14 0.03 0.95 680 NC NC 24 750 22000 360000 3.5 3.5 10 3.5 120000 350 1110 110000 120 120 0.47 120000	(6)	NA N	NA N	NA N	NA N	NA 0.499 U NA 11.4 J NA 11.4 J NA NA NA NA NA 92 24.7 J NA NA NA NA NA NA NA NA 360 U NA	NA 0.503 U NA 50.7 J NA	NA 0.0313 B NA 141 J NA

ATTACHMENT 1
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PAGE	8	OF	10
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LOCATION		cen.	UCERA B			1100000					
SAMPLE ID	Regiona		USEPA Region Screening	nai	U32SO04 U32SO040101	U32SO05 U32SO050101	U32SO06 U32SO060101	U325007 U3250070101	U325008 U3250080101	U32S009	U325016
			Levels ^(1,2)	i						U32SO090101	U32SO160101
SAMPLE DATE	Screenin			. i	20100916	20100916	20100916	20100917	20100917	20100917	20100917
SAMPLE CODE	Levels ^{(1,}		Protection o		NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	Residential	I Soil	Groundwate	er	so	50	so	50	so	50	so
SAMPLE TYPE			SSLs	- 1	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION POSITION				- 1	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP				
SUBMATRIX				- [SS	SS	SS	SS	SS	SS	SS
TOP DEPTH				- !	O	0	0	0	0	0	0
BOTTOM DEPTH				- 1	0.5	0.5	0.5	0.5	0.5	0.5	0.5
DIOXINS/FURANS (NG/KG)	<u> </u>					<u> </u>					
1,2,3,4,6,7,8,9-OCDD	15000	С	870	П	NA	NA NA	NA NA	NA	NA NA	NA NA	NA.
1,2,3,4,6,7,8,9-OCDF	15000	Ċ	870	П	NA	NA	NA NA	NA NA	NA	NA NA	NA
1,2,3,4,6,7,8-HPCDD	450	С	26	П	NA	NA	NA NA	NA NA	NA .	NA	NA NA
1,2,3,4,6,7,8-HPCDF	450	С	26	П	NA	NA	NA NA	NA NA	NA	NA NA	NA NA
1,2,3,4,7,8,9-HPCDF	450	С	26		NA	NA	NA NA	NA	NA NA	NA NA	NA
1,2,3,4,7,8-HXCDF	45	С	2.6		NA	NA	NA NA	NA .	NA NA	NA NA	NA
1,2,3,6,7,8-HXCDD	45	C	2.6	Ш	NA	NA	NA NA	NA NA	NA	NA .	NA
1,2,3,6,7,8-HXCDF	45	C	2.6	ЦĪ	NA .	NA	NA NA	NA	NA	NA	NA NA
1,2,3,7,8,9-HXCDD	45	C	2.6	$\sqcup \bot$	NA	NA	NA_	NA NA	NA .	NA NA	NA
1,2,3,7,8-PECDF	150	С	8.7	\vdash	NA	NA	NA	NA NA	NA_	NA NA	NA
2,3,4,6,7,8-HXCDF	45	С	2.6	╌┼	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA
2,3,4,7,8-PECDF	15	C	0.87		NA	NA	NA NA	NA NA	NA	NA NA	NA NA
2,3,7,8-TCDD	4.5	C	0.26	\vdash	NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA
2,3,7,8-TCDF	45	C	2.6	\vdash	NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA
TEQ (MALENIA	4.5 4.5	C	0.26	┝	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TEQ - HALFND	94	C	0.26 9	\vdash		NA NA		NA NA	NA NA	NA NA	NA NA
TOTAL HPCDD TOTAL HPCDF	NC NC	<u>-</u> -	NC NC	\vdash	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HXCDD	NC NC	+ -	NC	\vdash	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL HXCDF	NC NC	+ 1	NC NC	\vdash	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL PECDF	NC.	1	NC NC	\vdash	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA.
TOTAL TCDD	NC	1 1	NC	\vdash	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
TOTAL TCDF	NC	1 1	NC	\vdash	NA NA	NA	. NA	NA NA	NA	NA	NA NA
METALS (MG/KG)											
ARSENIC	0.39	C	0.0013		308 J	143 J	98.9 J	61.5 J	91.4 J	161 J	36.3 J
BARIUM	1500	N	300		NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
CADMIUM	7	N	1.4		0.476 U	0.5 U	0.0213 J	0.536 U	0.101)	5,29	0.528 U
CHROMIUM	12000	N(3)	3300000	(3)	NA	NA	NA	NA	NA NA	NA	NA
LEAD	400	N	14	(4)	196 J	120 J	27.1 J	12.9 J	17.1 J	88 J	12.6 J
MERCURY	2.3	N(s)	0.03		NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA
SELENIUM	39	N	0.95		NA	NA	NA	NA NA	NA NA	NA	NA NA
ZINC	2300	N	680	ļ.	NA	NA	NA NA	NA	NA NA	NA NA	NA NA
MISCELLANEOUS PARAMETERS (%)											
PERCENT MOISTURE	NC	\perp	NC	 - -	NA	NA	NA .	NA	NA NA	NA .	NA .
TOTAL SOLIDS	NC	لببل	NC	\Box	92	88	86	85	87	87	87
PCBS (UG/KG)	1 220				22.0.1		220.1	384	72.7	259	150 J
POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)	220	C	24	Щ.	33.8 J	312	238 J	384	12.7	259	130 J
2-METHYLNAPHTHALENE	31000	N	750	П	NA	NA NA	NA NA	NA NA	NA NA	NA.	NA
ACENAPHTHYLENE	340000	N _(e)		(6)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
ANTHRACENE	1700000	N.	360000	1	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
BAP EQUIVALENT	15	C	3.5		360	1200	190	390 U	380 U	63	380 U
BAP EQUIVALENT-HALFND	15	t	3.5		360	1200	190	390 U	380 U	63	380 U
BENZO(A)ANTHRACENE	150	1 č	10		NA NA	NA NA	NA NA				
BENZO(A)PYRENE	15	Ċ	3.5		360	1200	190 J	390 U	380 U	63 3	380 U
BENZO(B)FLUORANTHENE	150	č	35		NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA
BENZO(G,H,I)PERYLENE	170000	N ⁽⁷⁾		(7)	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA
BENZO(K)FLUORANTHENE	1500	T c	350	\vdash	NA NA	NA NA	NA NA				
CHRYSENE	15000	Ť	1100	1-1-	NA NA	NA NA	NA NA				
DIBENZO(A,H)ANTHRACENE	15	č	11		360 U	380 U	380 U	390 U	380 U	380 U	380 U
FLUORANTHENE	230000	N	160000	\Box	NA NA	NA	NA NA	NA .	NA	NA NA	NA
FLUORENE	230000	N	27000	\Box^{\dagger}	NA	NA	NA	NA	NA NA	NA	NA
INDENO(1,2,3-CD)PYRENE	150	С	120		NA	NA	NA NA	NA	NA NA	NA	NA NA
NAPHTHALENE	3600	C	0.47	П	NA NA	NA	NA NA	NA NA	NA NA	NA NA	NA.
PHENANTHRENE	170000	N ⁽⁷⁾	120000	(7)	NA NA	NA NA	NA .	NA	NA	NA NA	NA
PYRENE	170000	N	120000	\Box^{\dagger}	NA	NA	NA NA	NA	NA NA	NA NA	NA
				-/							

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LOCATION		PA U	SEPA Regional		U32S019		U32SO20		U32SO21	U325022	U3250S18
SAMPLE ID	Regional	- 1	Screening	U3250170101	U3250190101	U32SO200101	U32SO200101-AVG	U3250200101-D	U3250210101	U3250220101	U32SOS180601
SAMPLE DATE	Screening		Levels ^(1,2)	20100917	20100917	20100917	20100917	20100917	20100917	20100917	20101129
SAMPLE CODE	Levels ^(1,2)		Protection of	NORMAL	NORMAL	ORIG	AVG	DUP	NORMAL	NORMAL	NORMAL
MATRIX	Residential So	oil 1	Groundwater	SO SO	so	so	so	so	so	so	so
SAMPLE TYPE			SSLs	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION	1			NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	UNDER CAP
SUBMATRIX		- 1		SS	55	SS	SS	SS	SS		
TOP DEPTH				0	0	0	0 0			SS	SS
BOTTOM DEPTH	1			I .	_		· ·	0	0	0	0
DIOXINS/FURANS (NG/KG)	<u></u>	Щ.		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,2,3,4,6,7,8,9-OCDD	15000	c. I	870	NA.	NA NA	NA NA				Г	
1,2,3,4,6,7,8,9 OCDF		c -	870	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	6400
1,2,3,4,6,7,8-HPCDD		č	26	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA	530
1,2,3,4,6,7,8-HPCDF	450	č	26	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	450 J
1,2,3,4,7,8,9-HPCDF		c l	26	NA.	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	190 J 62
1,2,3,4,7,8-HXCDF		c l	2.6	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	220
1,2,3,6,7,8-HXCDD	45	C	2.6	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	9,1
1,2,3,6,7,8-HXCDF	45	С	2.6	NA NA	NA NA	NA .	NA NA	NA NA	NA NA	NA NA	44
1,2,3,7,8,9-HXCDD		C	2.6	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	5.9
1,2,3,7,8-PECDF		С	8.7	_NA	NA NA	NA	NA NA	NA.	NA NA	NA NA	48
2,3,4,6,7,8-HXCDF		C.	2.6	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA	25
2,3,4,7,8-PECDF		C.	0.87	NA NA	NA NA	NA	NA NA	NA_	NA	NA	110
2,3,7,8-TCDD		C	0.26	NA	NA	NA	NA NA	NA	_ NA	NA NA	0.74 J
2,3,7,8-TCDF		c .	2.6	NA NA	NA NA	NA	NA NA	NA	NA .	NA	130
TEQ		c	0.26	NA	NA NA	NA NA	NA	NA .	NA	NA	87.7
TEQ - HALFND		<u>c </u>	0.26	NA	NA NA	NA NA	NA	NA_	NA	NA NA	89.2
TOTAL HPCDD TOTAL HPCDF		<u>c</u>	9	NA NA	NANA	NA .	NA	NA	NA	NA -	2800
TOTAL HXCDD	NC NC		NC	NA	NA NA	NA	NA	NA	NA	NA	560
TOTAL HXCDF	NC NC	+	NC NC	NA	NA	NA	NA NA	NA	NA	NA NA	94
TOTAL PECDF	NC NC		NC NC	NA NA	NA NA	NA	NA NA	NA	NA NA	NA	650
TOTAL TCDD	NC NC		NC NC	NA NA	NA_	NA	NA	NA NA	NA	NA NA	750
		+			NA NA	NA NA	NA NA	NA NA	NA	NA	13
TOTAL TCDF	NC NC		NC NC	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	550
	NC	c I	NC	NA NA	NA	NA	NA .	NA .	NA	NA	550
TOTAL TCDF METALS (MG/KG)	NC 0.39	C	NC 0.0013	NA 59 J	NA 86.7 J	NA 3.98 J	NA 4.055	NA 4.13 J	NA 9.47 J	NA 3.24 J	550 37 J
TOTAL TCDF METALS (MG/KG) ARSENIC	NC 0.39 1500	Ň	NC 0.0013 300	NA 59 J NA	NA 86.7 J NA	NA 3.98 J NA	NA 4.055 NA	NA 4.13 J NA	NA 9.47 J NA	NA 3.24 J NA	550 37 J 150
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM	0.39 1500 7	N N	0.0013 300 1.4	NA 59 J NA 0.552 U	NA 86.7 J NA 0.538 U	NA 3.98 J NA 0.516 UJ	NA 4.055 NA 0.5125 U	NA 4.13 J NA 0.509 U	NA 9.47 J NA 5.83	NA 3.24 J NA 0.273 J	550 37 J 150 69
TOTAL TCDF METALS (MG/KG) ARSENIC BARLIUM CADMIUM	0.39 1500 7 12000 N	N N J ⁽³⁾	0.0013 300 1.4 99000000 (3)	NA 59 J NA 0.552 U NA	NA 86.7 J NA 0.538 U NA	NA 3.98 J NA 0.516 UJ NA	NA 4.055 NA 0.5125 U NA	NA 4.13 J NA 0.509 U NA	NA 9.47 J NA 5.83 NA	NA 3.24 J NA 0.273 J NA	550 37 J 150 69 75
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CADMIUM CHROMIUM	0.39 1500 7 12000 N	N N J ⁽³⁾	0.0013 300 1.4 99000000 (3) 14 (4)	NA 59 J NA 0.552 U NA 11.5 J	NA 86.7 J NA 0.538 U NA 54.2 J	NA 3.98 J NA 0.516 UJ NA 13.6 J	NA 4.055 NA 0.5125 U NA 17.5	NA 4.13 J NA 0.509 U NA 21.4 J	NA 9.47 J NA 5.93 NA 263 J	NA 3.24 J NA 0.273 J NA 8.77 J	550 37 J 150 69 75 9800
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM LEAD MERCURY	NC 0.39 1500 7 12000 N 400 2.3 N	N (3) N (5)	NC 0.0013 300 1.4 99000000 (3) 14 (4) 0.03	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA	NA 9.47 J NA 5.93 NA 263 J NA	NA 3.24 J NA 0.273 J NA 8.77 J NA	37 J 150 69 75 9800 3.3 J
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM	0.39 1500 7 12000 N 400 2.3 N	N N J ⁽³⁾ N J ⁽⁵⁾	NC 0.0013 300 1.4 99000000 (3) 1.4 (4) 0.03 0.95	NA 59 J NA 0.552 U NA 11.5 J NA NA	NA 86.7 J NA 0.538 U NA 54.2 J NA NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA	NA 9.47 J NA 5.83 NA 263 J NA NA	NA 3.24 J NA 0.273 J NA 8.77 J NA NA NA	37 J 150 69 75 9800 3.3 J
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC	0.39 1500 7 12000 N 400 2.3 N	N (3) N (5)	NC 0.0013 300 1.4 99000000 (3) 14 (4) 0.03	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA	NA 9.47 J NA 5.93 NA 263 J NA	NA 3.24 J NA 0.273 J NA 8.77 J NA	37 J 150 69 75 9800 3.3 J
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM	0.39 1500 7 12000 N 400 2.3 N	N N J ⁽³⁾ N J ⁽⁵⁾	NC 0.0013 300 1.4 99000000 14 (4) 0.03 0.95 680	NA 59 J NA 0.552 U NA 11.5 J NA NA NA	NA 86.7 J NA 0.538 U NA 54.2 J NA NA NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA NA NA NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA	NA 9:47 J NA 5:93 NA 263 J NA NA NA NA	NA 3:24 J NA 0,273 J NA 8:77 J NA NA NA NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%)	0.39 1500 7 12000 N 400 2.3 N 2300	N N J ⁽³⁾ N J ⁽⁵⁾	NC 0.0013 300 1.4 99000000 (3) 1.4 (4) 0.03 0.95	NA 59 J NA 0.552 U NA 11.5 J NA NA	NA 86:7 J NA 0.538 U NA 54.2 J NA NA NA NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA	NA 9.47 J NA 5.83 NA 263 J NA NA NA NA NA	NA 3124 J NA 0.273 J NA 8.77 J NA NA NA NA NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCSS (UG/KG)	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300	N N J ⁽³⁾ N J ⁽⁵⁾	NC 0.0013 300 1.4 99000000 (3) 14 (4) 0.03 0.95 680 NC	NA 59 J NA 0.552 U NA 11.5 J NA NA NA NA	NA 86.7 J NA 0.538 U NA 54.2 J NA NA NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA NA NA NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA	NA 9:47 J NA 5:93 NA 263 J NA NA NA NA	NA 3:24 J NA 0,273 J NA 8:77 J NA NA NA NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500
TOTAL TCDF METALS (MG/KG) ARSENIC BARLIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300 NC NC	N N J ⁽³⁾ N J ⁽⁵⁾	NC 0.0013 300 1.4 99000000 (3) 14 (4) 0.03 0.95 680 NC	NA 59 J NA 0.552 U NA 11.5 J NA NA NA NA	NA 86:7 J NA 0.538 U NA 54.2 J NA NA NA NA NA NA	NA 3.9B J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA	NA 9.47 J NA 5.83 NA 263 J NA NA NA NA NA NA NA NA	NA 3:24 J NA 0,273 J NA 8.77 J NA NA NA NA NA NA NA NA NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG)	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300 NC NC	N N J ⁽³⁾ N N N	NC 0.0013 300 1.4 99000000 03 14 (4) 0.03 0.95 680 NC NC NC	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86:7 J NA 0.538 U NA 54.2 J NA NA NA NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA NA NA NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA	NA 9.47 J NA 5.83 NA 263 J NA NA NA NA NA	NA 3124 J NA 0.273 J NA 8.77 J NA NA NA NA NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLANPHTHALENE	NC 0.39 1500 7 12000 N 1400 2.3 N 1500 NC NC 220 131000 NC 131000 NC	N N N N N N N N N N N N N N N N N N N	NC 0.0013 300 1.4 99000000 17 4 0.03 0.95 680 NC NC 24 750 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 750 17 7	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86:7 J NA 0.538 U NA 54.2 J NA NA NA NA NA NA	NA 3.9B J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA	NA 9.47 J NA 5.83 NA 263 J NA NA NA NA NA NA NA NA	NA 3:24 J NA 0,273 J NA 8.77 J NA NA NA NA NA NA NA NA NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACCENAPHTHYLENE	NC 0.39 1500 7 12000 N 400 2.3 N 2300 N C NC 220 31000 N 340000 N	N (3) N (4) (5) N (7) N	NC 0.0013 3900 1.4 99000000 3) 14 (4) (6) (6) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7)	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3,98 J NA 0,516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA	NA 9:47 J NA 5:93 NA 263 J NA NA NA NA NA ON NA ON NA ON	NA 3:24 J NA 0,273 J NA 8:77 J NA NA NA NA NA NA NA NA 253	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC TOTAL SOLIDS PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE	NC 0.39 1500 7 12000 N 400 2.3 N S S S S S S S S S S S S S S S S S S	N N N N N N N N N N N N N N N N N N N	NC 0.0013 300 1.4 99000000 03 1.4 (4) 0.03 0.95 680 NC NC X4 X4 X5 X5 X5 X5 X5 X5	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9.47 J NA 5.83 NA 263 J NA	NA 3:24 J NA 0.273 J NA 8.77 J NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300 NC NC 220 31000 340000 N 1700000 15	N (3) (4) (5) N (7) (5) N (7) (6) N (7) (6) N (7) (6) N (7) (7) (7) (7) (7) (7) (7) (7) (7) (7)	NC 0.0013 3900 1.4 49 99000000 31 4 49 49 680 680 680 750 22000 69 3.5 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680	NA 39 J NA 0.552 U NA 11.5 J NA	NA SG:7 J NA 0.538 U NA 5-4.2 J NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA NA N	NA 4.13 J NA 0.509 U NA 21.4 J NA	NA 9:47 J NA 5:93 NA 263 J NA	NA 3:24 J NA 0:273 J NA 8:77 J NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CAMMUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACTEMPHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT	NC 0.39 1500 7 12000 N 400 2.3 N N C N C N C 220 170000 N 1700000 N 1700000 N 15 N C N C N C N C N C N C N C N C N C N	N (3) (4) (5) N (4) (5) N (7) N (7) (6) N (7) (6) N (7) (7) (7) (7) (7) (7) (7) (7) (7) (7)	NC 0.0013 3000 1.4 490000000 314 490000000 315 4800000000000000000000000000000000000	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA NA	NA 9:47 J NA 5:83 NA 263 J NA	NA 3:24 J NA 0,273 J NA 8,77 J NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA NA NA NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLANPHHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT-HALFND BBAP EQUIVALENT-HALFND	NC 0.39 1500 7 12000 N 12000 N 1 15 150 1500 N 1 1500 N 1 150 N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	N	NC 0.0013 3000 1.4 99000000 31 4 99000000 30 14 680 680 680 750 22000 69 360000 3.5 3.5 10 10 10 10 10 10 10 1	NA 39 J NA 0.552 U NA 11.5 J NA NA NA NA NA NA NA 0.552 U NA	NA 86.7 J NA 0.538 U NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA NA 88 34.25 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9.47 J NA 5.93 NA 263 J NA NA NA NA NA NA NA 170 170 NA	NA 3:24 J NA 0.273 J NA 8:77 J NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA NA NA NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CAROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLINAPHTHALENE ANTHRACENE BAP EQUIVALENT-HALFND BENZO(A)PITENE	NC 0.39 1500 7 7 12000 N 400 2.3 N C NC 1220 31000 N 1700000 N 1700000 15 15 15 15 15 150 1500 N 1500 N C N 1700000 N 1700000 N 1700000 N 1700000 N 155 N 15	N N 1 (3) N N N N N N N N N N N N N N C C C C C	NC 0.0013 300 1.4 99000000 3) 1.4 (4) 0.95 680 NC NC 24 750 22000 (6) 3.5 3.5 3.5 10 3.5 3.5 10 3.5 3.5 10 3.5 3.5 10 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	NA 39 J NA 0.552 U NA 11.5 J NA NA NA NA NA NA NA 0.0552 W NA	NA SG:7 J NA 0.538 U NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA 88 34.25 NA NA NA NA NA NA NA NA NA N	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA S9 J1.3 J NA NA NA NA NA NA NA NA NA N	NA 9:47 J NA 5:93 NA 263 J NA NA NA NA NA NA 170 NA NA 170 NA 170 NA 170	NA 3.24 J NA 0.273 J NA 8.77 J NA NA NA NA NA NA NA S7 253 NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC TOTAL SOLIDS PCBS (UG/KG) AROCLOR- 1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT HALFND BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(A)PYRENE BENZO(A)CORANTENE	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300 NC NC 1000 1700000 1700000 15 15 150 150 150	N N N N N N N N N N N N N N N N N N N	NC 0.0013 300 1.4 99000000 3) 680 NC NC 24 750 680000 3,5 3,5 10 3,5 35 10 3,5 35 35 35 10 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5 3,5	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.93 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA 89 31.3 J NA	NA 9:47 J NA 5:93 NA 263 J NA	NA 3:24:J NA NA 0,273:J NA 8:77:J NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT-HALFND BAP EQUIVALENT-HALFND BAP EQUIVALENT-HALFND BENZO(A)MTHRACENE BENZO(A)MTHRACENE BENZO(B)PLUORAMTHENE BENZO(B)PLUORAMTHENE BENZO(B)PULORAMTHENE BENZO(B)PULORAMTHENE BENZO(B)PULORAMTHENE BENZO(B)PULORAMTHENE BENZO(B)PULORAMTHENE BENZO(B)PULORAMTHENE	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300 N NC NC 220 31000 N 1700000 N 15 15 15 150 150 170000 N	N N N N N N N N N N N N N N N N N N N	NC 0.0013 3900 1.4 49 99000000 31 4 49 40 40 40 40 40 40	NA 39 J NA 0.552 U NA 11.5 J NA	NA SG:7 J NA 0.538 U NA 54.2 J NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA 88 34,25 NA NA NA NA NA NA NA NA NA N	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9.47 J NA 5.93 NA 263 J NA NA NA NA NA NA NA 170 NA	NA 3:24 J NA 0.273 J NA 8.77 J NA NA NA NA NA NA NA S7 2-53 NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
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TOTAL TCDF METALS (MG/KG) ARSENIC BARLIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACTEMPATHALENE ANTHRACENE BAP EQUIVALENT BAP EQUI	NC 0.39 1500 7 12000 N 1400 2.3 N 39 2300 N NC NC 220 31000 N 170000 N 1500 150 170000 N 1500 1500 N	N N N N N N N N N N N N N N N N N N N	NC 0.0013 300 1.4 99000000 31 4 99000000 30 14 90 14 90 14 90 15 15 15 15 15 15 15 1	NA 39 J NA 0.552 U NA 11.5 J NA NA NA NA NA NA NA 0.552 W NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA 88 34.25 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9.47 J NA 5.93 NA 263 J NA NA NA NA NA NA 170 170 NA	NA 3:24: J NA 0.273: J NA 8.77: J NA NA NA NA NA NA S7 2:33 NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACCENPAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)PYRENE BENZO(A)PYRENE BENZO(CI)PJENGENE	NC 0.39 1500 7 12000 N 12000 N 1500 155 15 1500 15500 15000 N 15000 1550 15000 N 15000 N 15000 N 15000 N 15000 N 15000 N 1500 N	N N N N N N N N N N N N N N N N N N N	NC 0.0013 300 1.4 499000000 0.95 680 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	NA 39 J NA 0.552 U NA 11.5 J NA NA NA NA NA NA NA 0.052 N NA	NA 86:7 J NA 0.538 U NA	NA 3.28 J NA 0.516 UJ NA 13.6 J NA	NA 4055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA NA N	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9:47 J NA 5:93 NA 263 J NA NA NA NA NA 170 170 NA	NA 3:24 J NA 0.273 J NA 8.77 J NA NA NA NA NA NA S7 253 NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLIUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT	NC 0.39 1500 NC 12000 NC NC NC NC NC 170000 N 1500 150 150 1500 1500 1500 1500	N N N N N N N N N N N N N N N N N N N	NC 0.0013 3000 1.4 99000000 31 4 90000000 30 30 30 30 30 3	NA 39 J NA 0.552 U NA 11.5 J NA NA NA NA NA NA 0.552 U NA	NA 86.7 J NA 0.538 U NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA 88 34.25 NA	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9.47 J NA 5.83 NA 263 J NA NA NA NA NA 170 170 170 NA	NA 3,24 J NA 0,273 J NA NA 8,77 J NA	550 37 J 150 69 75 9800 3.3 J 0.91 33500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYLIC AROMATIC HYDROCARBONS (UG/KG) 2-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT-HALFND BENZO(A)ANTHRACENE BENZO(A)PYRENE BENZO(B)PFUNDRANTHENE BENZO(B)PFUNDRANTHENE BENZO(CK)PLUORANTHENE FUNDRENE	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300 N NC NC 220 31000 N 170000 N 1500 15 15 15 150 170000 N 170000 N 1500 N	N N N N N N N N N N N N N N N N N N N	NC 0.0013 3900 1.4 49 99000000 31 4 49 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680 680	NA 39 J NA 0.552 U NA 11.5 J NA	NA SG:7 J NA O.538 U NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA NA N	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9.47 J NA 5.93 NA 263 J NA	NA 3:24 J NA 0.273 J NA 8.77 J NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CAMMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A)PYRENE BENZO(A)PYRENE BENZO(B)FLUORANTHENE CHRYSENE DENZO(C,H,JPERYLENE BENZO(C,H,JDPERYLENE BENZO(C,H,UORANTHENE CHRYSENE DIBENZO(A,HJANTHRACENE FLUORANTHENE	NC 0.39 1500 7 12000 N 400 2.3 N 39 2300 NC NC 220 31000 150 150 150 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000 15000	N N N N N N N N N N N N N N N N N N N	NC 0.0013 3000 1.4 490000000 31 4 49 49 49 49 49 49 49	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.92 J NA 13.6 J NA 13.6 J NA NA NA NA NA NA NA NA NA N	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA NA N	NA 4:13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9:47 J NA 5:83 NA 263 J NA	NA 3-24-3 NA 0,273-3 NA 8,77-3 NA NA NA NA NA NA NA NA NA N	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CHROMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLANDHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BAP EQUIVALENT BENZO(A) PHANTHRACENE BENZO(A) PHANTHRACENE BENZO(A) PHANTHENE BENZO(A) PHANTHENE BENZO(A) HYANTHENE BENZO(CK) FLUORANTHENE BENZO(C	NC 0.39 1500 7 12000 N 12000 N 2.3 N 39 2300 N NC NC 220 31000 N 170000 N 15 15 15 15 150 150 1500 1500 1500 1500	N N N N N N N N N N N N N N N N N N N	NC 0.0013 3000 1.4 990000000 31 4 4 0.03 0.95 680	NA 39 J NA 0.552 U NA 11.5 J NA	NA SG:7 J NA 0.538 U NA	NA 3.98 J NA 0.516 UJ NA 13.6 J NA	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA NA N	NA 4.13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9.47 J NA 5.93 NA 263 J NA	NA 3:24 J NA 0.273 J NA 8.77 J NA	550 37 J 150 69 75 9800 3.3 J 0.91 3500 NA NA NA NA NA NA NA NA NA
TOTAL TCDF METALS (MG/KG) ARSENIC BARLUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM ZINC MISCELLANEOUS PARAMETERS (%) PERCENT MOISTURE TOTAL SOLIDS PCBS (UG/KG) AROCLOR-1260 POLYCYCLIC AROMATIC HYDROCARBONS (UG/KG) Z-METHYLNAPHTHALENE ACENAPHTHYLENE ANTHRACENE BAP EQUIVALENT BAP EQUIVALENT BENZO(A)PYRENE BENZO(A)PYRENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)PERYLENE BENZO(G,H,I)ANTHRACENE BENZO(G,H,I)ANTHRACENE BENZO(G,H,I)ANTHRACENE BENZO(G,H,I)ANTHRACENE BENZO(G,H,I)ANTHRACENE BENZO(G,H,I)ANTHRACENE BENZO(G,H,I)ANTHRACENE FLUORANTHENE	NC 0.39 1500 12000 N	N N N N N N N N N N N N N N N N N N N	NC 0.0013 3000 1.4 490000000 31 4 49 49 49 49 49 49 49	NA 59 J NA 0.552 U NA 11.5 J NA	NA 86.7 J NA 0.538 U NA 54.2 J NA	NA 3.92 J NA 13.6 J NA 13.6 J NA NA NA NA NA NA NA NA NA N	NA 4.055 NA 0.5125 U NA 17.5 NA NA NA NA NA NA NA NA NA N	NA 4:13 J NA 0.509 U NA 21.4 J NA NA NA NA NA NA NA NA NA N	NA 9:47 J NA 5:83 NA 263 J NA	NA 3-24-3 NA 0,273-3 NA 8,77-3 NA NA NA NA NA NA NA NA NA N	550 37 J 150 69 75 9800 3.3 J 0.91 3500 20 NA

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POSITIVE DETECT R SURFACE SOIL
COMPARISON TO DIRECT CONTACT AND PROJECTION OF GROUNDWATER CRITERIA
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Footnotes:

(1) Screening criteria based on EPA Regional Screening Levels (RSLs) Summary Table (November 2010). The adjusted RSLs for residential soils

(1) Steeling that a based with a based with a base of the steeling that the control of the adjusted resusting some represent the one-in-one million (1E-06) cancer risk level or a non-cancer hazard quotient of 0.1 for carcinogenic (C) and non-carcinogenic (N) (2) Concentrations exceeding the referenced groundwater protection values are "latilizated" (and highlighted yellow). Concentrations exceeding the referenced RSLs for residential soils are "bolded" (and highlighted orange). Concentrations exceeding both referenced criteria are presented in referenced RSLs for residential sous are bouled talled injuring to storage).

(3) The value is for trivalent chromium.

(4) Calculated from the EPA website (http://epa-prgs.oml.gov/cgi-bin/chemicals/csl_search).

(5) The value is for mercuric chloride (and other mercury salts).

(6) The value for accenaphthene is used as a surrogate.

(8) The value for acenaprimente is used as a surrogate.

(7) The value for pyrene is used as a surrogate.

Of the value for pyrene is used as a surrogate.

Definitions: C = carcinogenic endpoint; N = non-carcinogenic endpoint; NC = no criterion available; NA = Not analyzed Qualifiers: B = present in blank; J = estimated; L = biased low; U = non-detected



HUMAN HEALTH RI.

PAGE I UF B

LOCATION	Adjusted US	SEPA	USEPA	41MW01	-41SB03		41MW02-41SB04					41MW03-415B07
SAMPLE ID	Regiona		Regional	41SB0303	41SB0304	41SB0402	41SB0403	415B0404	41SB0702	415B0702-AVG	41SB0702-D	41SB0703
SAMPLE DATE	Screenin		Screening	19920801	19920801	19920801	19920801	19920801	19920801	19920801	19920801	19920801
SAMPLE CODE	Levels ^{(1,2}	2)	Levels ^(1,2)	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP	ORIG
MATRIX	Residential		Protection of	so	so	so	SO	so	so	so	so	so
SAMPLE TYPE	l		Groundwater	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION	ŀ		SSLs	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX	Í			SB	SB	SB	SB	SB	SB	SB	SB	SB
TOP DEPTH	İ			10	15	5	10	15	5	5	5	10
BOTTOM DEPTH	i			12	17	7	12	17	9	9	9	14
METALS (MG/KG)				·	!							
ALUMINUM	7700	N	55000	469	3200	2030	1020	2520	415	450	485	1390
ARSENIC	0.39	C	0.0013	2.4 J	0.76 UJ	6.6 J	0.69 UJ	0.73 UJ	3.4 J	3.8	4.2 1	0.76 UJ
BARIUM	1500	N	300	9 B 0.37 B	70.7 2.9	14.7 B 0.24 U	17.9 B 0.23 U	23.3 B 0.37 B	10 B 0.25 U	10.55 U 0.25 U	11.1 B 0.25 U	27.1 B 0.25 U
BERYLLIUM CADMIUM	16	N N	58 1.4	1,2 U	1.3 U	1.2 U	1.2 U	1.2 U	1.2 U	1.25 U	1.3 U	1.3 U
CALCIUM	NC NC	+"	NC NC	333 U	2720	209 B	76.5 B	405 B	153 B	166.5 U	180 B	1040 B
CHROMIUM	12000	N(3)	99000000 (3)	2.5 U	3.7	4.3	2.6	3.5	2.5 U	2.5 U	2.5 U	2.5 U
COBALT	2.3	N	0.49	8.3 B	66.2	3.6 U	3.5 U	10.4 8	3.7 U	3.75 U	3.8 U	22.7
COPPER	310	N	51	5.9 B	62.9	4 B	8.4	6.7	5.4 B	4 U	2.6 B	14.2
IRON	5500	N	640	2480	9470	6410	1430	3040	2410	2615	2820	4020
LEAD	400	N	14 (4)	3.2 J	10.1 3	4.1 J	3.1 J	3.6 J	2.5 UJ	2.325	3.4 J	4.3 J
MAGNESIUM	NC	1	NC	208 B	2080	117 B	46.6 B	351 B	53.2 B	59.95 U	66.7 B	876 B
MANGANESE	180 2.3	N N ⁽⁵⁾	57 0.03	22.7 0.25 U	84.2 0.25 U	10.6 0.24 U	3.3 B 0.23 U	57.5 0.24 U	3.1 B 0.25 U	3.15 U 0.25 U	3.2 B 0.25 U	35.4 0.25 U
MERCURY	150	N ₍₂₎	48	3.7 U	27,3	3.6 U	3.5 U	3.6 U	3.7 U	3.75 U	3.8 U	7.2 B
NICKEL POTASSIUM	NC NC	- IN	NC NC	225 U	1290	305 B	213 U	354 B	237 B	247 U	257 B	808 B
SELENIUM	39	N	0.95	0.49 U	0.51 U	0.47 U	0.46 U	0.49 U	0.49 U	0.495 U	0.5 U	0.5 U
SILVER	39	N	1.6	1.2 U	1.3 U	1.2 B	1.2 U	10.1	1.2 U	1.25 U	1.3 U	1.3 U
VANADIUM	39	N	180	5.1 B	22.2	7.8 B	3,4 8	12.6	5.8 B	5.55 U	5.3 8	7.9 B
ZINC	2300	N	680	21	84.2	5.3	4.7	10.5	5.3	3.3	2.6 8	18.5
MISCELLANEOUS PARAMETERS (%)	1 No		No.	T NA	I NA	T NA	NA	NA NA	NA NA	l NA	l NA	NA NA
PERCENT MOISTURE PCBS (UG/KG)	NC		NC	NA	J INA	I NA) IVA	1 19/4	I IVA	1 100	1 100	1
AROCLOR-1260	220	Τc	24	40 U	42 U	37 U	38 U	39 U	41 U	41 U	41 U	42 U
PESTICIDES/PCBS (UG/KG)											,	
4,4'-DDD	2000	C	66	4 U	4.2 U	3.7 U	3.8 U	3.9 U	4.1 U	4.1 U	4.1 U	4.2 U
4,4'-DDE	1400	С	47	4 U	4.2 U	3.7 U	3.8 U	3.9 U	4.1 U	4.1 U	4.1 U 4.1 U	4.2 U 4.2 U
4,4'-DDT	1700	C	67 3000	4 U	4.2 U 4.2 U	7.5 3.7 U	3.8 U 3.8 U	3.9 U 3.9 U	4.1 U 4.1 U	4.1 U 4.1 U	4.1 U	4.2 U
ENDOSULFAN II ENDRIN	37000 1800	N	440	4 U	4.2 U	20	3.8 U	3.9 Ú	4.1 U	4.1 U	4.1 U	4.2 U
GAMMA-CHLORDANE	1600	C(6)	13 (6	2.1 U	2.2 Ü	1.9 U	2 U	2 Ü	2.1 U	2.1 U	2.1 U	2.2 U
HEPTACHLOR EPOXIDE	53	l c		2.1 U	2,2 U	1.9 U	2 U	2 U	2.1 U	2.1 U	2.1 U	2.2 U
PETROLEUM HYDROCARBONS (MG/KG)												
TOTAL PETROLEUM HYDROCARBONS	NC		NC	12.2 U	12.6 U	16.3	11.5 U	12 U	12.2 U	12.35 U	12.5 U	12.6 U
SEMIVOLATILES (UG/KG)		1		1	1	270.11	700.11	400.11	410.11	410.11	410 U	420 U
2-METHYLNAPHTHALENE	31000	N n(2)	750	400 U 400 U	420 U 420 U	370 U 82 J	390 U 390 U	400 U 400 U	410 U 410 U	410 U 410 U	410 U	420 U
ACENAPHTHYLENE	340000 1700000	N ⁽⁷⁾	22000 (7 360000	400 U	420 U	90 J	390 U	400 U	410 U	410 U	410 U	420 U
ANTHRACENE BAP EQUIVALENT	1700000	C	3.5	400 U	420 U	294.72	390 U	400 U	410 U	410 U	410 U	420 U
BAP EQUIVALENT-HALFND	15	Ť	3.5	400 U	420 U	479.72	390 U	400 U	410 U	410 U	410 U	420 U
BENZO(A)ANTHRACENE	150	C	10	400 U	420 U	320 J	390 U	400 U	410 U	410 U	410 U	420 U
BENZO(A)PYRENE	15	C	3.5	400 U	420 U	190 J	390 U	400 U	410 U	410 U	410 U	420 U
BENZO(B)FLUORANTHENE	150	Ċ	35	400 U	420 U	560	390 U	400 U	410 U	410 U	410 U	420 U
BENZO(K)FLUORANTHENE	1500	C	350	400 U	420 U	420	390 U 390 U	400 U 400 U	410 U 410 U	410 U 410 U	410 U 410 U	420 U 420 U
CARBAZOLE	NC 15000	C	NC 1100	400 U 400 U	420 U 420 U	48 J 520	390 U	400 U	410 U	410 U	410 U	420 U
CHRYSENE DIBENZOFURAN	15000 7800	N	680	400 U	420 U	42 J	390 U	400 U	410 U	410 U	410 U	420 U
DIETHYL PHTHALATE	4900000	N N	12000	400 U	420 U	370 U	390 U	400 U	410 U	410 U	410 U	420 U
DI-N-BUTYL PHTHALATE	610000	N N	9200	400 U	420 U	370 U	390 U	400 U	410 U	410 U	410 U	420 U
FLUORANTHENE	230000	N	160000	400 U	420 U	640	390 U	400 U	410 U	410 U	410 U	420 U
INDENO(1,2,3-CD)PYRENE	150	С	120	400 U	420 U	120 J	390 U	400 U	410 U	410 U	410 U	420 U
NAPHTHALENE	3600	C	0.47	400 U	420 U	56 J	390 U	400 U	410 U	410 U	410 U	420 U
PHENANTHRENE	170000	N _(B)	120000 (8	400 U	420 U	350 J	390 U	400 U	410 U	410 U	410 U	420 U
PYRENE	170000	N	120000	400 U	420 U	520	390 U	400 U	410 U	410 U	410 U	420 U
VOLATILES (UG/KG)	6100000	N	4500	17 U	23 U	9 U	27 U	15 U	11 U	13.5 U	16 U	18 U
CARBON DISULFIDE	6100000 82000	N	310	17 U	12 U	4.3	6.3	3 3	3)	3 J	12 U	12 U
CAROON DISULTIDE	1 02000	1 14	1 710 1	1 14 0	1	<u> </u>		·				

ATTACHMENT 1
POSITIVE DETECTIC SUBSURFACE SOIL
COMPARISON TO DIRECT CONTACT A ... CYTION OF GROUNDWATER CRITERIA
HUMAN HEALTH R... ... SSMENT - UXO 32
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LOCATION	Adjusted USEPA	USEPA					41SB01			41SB02	
SAMPLE ID	Regional	Regional	41SB0703-AVG	41SB0703-D	41SB0704	41SB0102	41SB0103	41SB0105	41SB0201	415B0203	41SB0204
SAMPLE DATE	Screening	Screening	19920801	19920801	19920801	19920801	19920801	19920801	19920801	19920801	19920801
SAMPLE CODE	Levels(1,2)	Levels ^(1,2)	AVG	DUP	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	Residential Soil	Protection of	so	so.	SO	SO	SO SO	SO	SO	so	SO
SAMPLE TYPE	Residential Son	Groundwater									
		SSLs	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION		3023	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX			SB	SB	SB	SB	SB	SB	58	SB	SB
TOP DEPTH			10	10	15	5	10	20	5	10	15
BOTTOM DEPTH	ŀ		14	14	17	7	12	22	7	12	17
METALS (MG/KG)		•								•	
ALUMINUM	7700 N	55000	1815	2240	2450	7070	492	5130	2800	2390	3190
ARSENIC	0.39C		0.755 U	0.75 UJ	0.78 UJ	0.72 UJ	0.75 UJ	0.77 UJ	328 J	2.3	1.3 J
BARIUM	1500 N	300	33.975	54.4	60.2	24.6 B	9.8 B	93.9	92.6 0.39 B	24.5 B	39.5 B
BERYLLIUM	16 N	58	0.25 U	0.25 U	1.5	0.52 B	0.25 U	4.6	0.39 B	0.31 8	0.31 B
CADMIUM	7 N	1.4	1.3 U	1.3 U	1.3 U	1.2 U	1.3 U	1.3 U	2	1.2 U	1.2 U
CALCIUM	NC (5)	NC (3)	1095 U	1150 B	1870	547 B	74.9 U	3080	780 B	287 U	706 B
CHROMIUM	12000 N ⁽³⁾	99000000 (3)	2.5 U	2.5 U	5	15.7	2.9	12.8	7.2	6.6	6.6
COBALT	2.3 N	0.49	19.3	15.9	71.7	4.2 B	3.8 B	70.4	6.2 B 23.9	3.7 B	5.7 B
COPPER	310 N	51	16.6	19	16.6	10.5	13	20.5 35200	23.9 13800	6.6 5670	8.6 6120
IRON	5500 N	640	4610	5200	6510	7670	481 2.6 J	35200 6.2 J	13800 46 J		6.2 3
LEAD	400 N	14 (4)	5.35	6.4 J	15.8 J	4.4 J			186 B	5 J	
MAGNESIUM	NC N	NC F	1013 U	1150 B	1650	416 B	29.2 B	2350	186 B 27.8 J	265 B 14.8 J	651 B 30.7 J
MANGANESE MERCURY	180 N 2.3 N ⁽⁵⁾	57 0.03	40.15 0.25 U	44.9 0.25 U	59.5 0.26 U	17.9 J 0.12 U	1.3 UJ 0.13 U	116 J 0.13 U	0.18	0.12 U	0.12 U
		48	7 U	0.25 U	53.1		3.8 U	30.9	5.2 B	3.5 U	3.6 U
NICKEL	150 N	48 NC	989 U	6.8 B 1170 B	33.1 1410	4.1 B 903 B	3.8 U 231 B	2100	330 B	3.5 U 303 B	493 B
POTASSIUM SELENIUM	39 N	0.95	0.5 U	0.5 U	0.52 U	0.48 UJ	0.5 UJ	0.51 UJ	0.7 J	0.46 U3	0.48 UJ
SILVER	39 N	1.6		1.3 U	1.3 U	1.2 U	1.3 U	2 B	1.8 B	1.3 B	1.2 U
VANADIUM	39 N	180	1.3 U 8.35 U	8.8 B	14.6	27.4	4.1 B	58.3	11.8	11.1 B	20.4
ZINC	2300 N		21.35	24.2	33.6	23.8	7.7	76.4	33.9	11.2	29.1
MISCELLANEOUS PARAMETERS (%)	2300 N	000	21.55	27.6	33.0	25.0	· · · · · · · · · · · · · · · · · · ·	70.4	33.3	11.2	25.1
PERCENT MOISTURE	NC	NC NC	NA	NA	NA NA	NA NA	NA NA	I NA	NA NA	NA NA	NA NA
PCBS (UG/KG)			1,	.,,,	,,,,		I		14.		,
AROCLOR-1260	220 C	24	41.5 U	41 U	43 U	40 U	41 U	41 U	38 U	38 U	40 U
PESTICIDES/PCBS (UG/KG)						•					
4.4'-DDD	2000 C	66	4.15 U	4.1 U	4.3 U	4 U	4.1 U	4.1 U	53	3.8 U	4 U
4,4'-DDE	1400 C	47	4.15 U	4.1 U	4.3 U	4 U	4.1 U	4.1 U	160	3.8 U	4 U
4,4'-DDT	1700 C	67	4.15 U	4.1 U	4.3 U	4 U	4.1 U	4.1 U	980	5.9	4 U
ENDOSULFAN II	37000 N	3000	4.15 U	4.1 U	4.3 U	4 U	4.1 U	4.1 U	3.8 U	3.8 U	4 U
ENDRIN	1800 N	440	4.15 U	4.1 U	4.3 U	4 U	4.1 U	4.1 U	15	3.8 U	4 U
GAMMA-CHLORDANE	1600 C ⁽⁶⁾		2.15 ป	2.1 U	2.2 U	2.1 U	2.1 U	2.1 U	1.4 J	2 U	2.1 U
HEPTACHLOR EPOXIDE	53 C	0.15	2.15 U	2.1 U	2,2 U	2.1 U	2.1 U	2.1 U	2 U	2 U	2.1 U
PETROLEUM HYDROCARBONS (MG/KG)											
TOTAL PETROLEUM HYDROCARBONS	NC	NC	12.5 U	12.4 U	12.9 U	17.2	12.5 U	12.6 U	143	12,5	17,7
SEMIVOLATILES (UG/KG)						Y				700 117	440.11
2-METHYLNAPHTHALENE	31000 N	750	420 U	420 U	430 U	400 U	410 U	410 U	38 J	390 UJ	410 U
ACENAPHTHYLENE	340000 N ⁽⁷⁾		420 U	420 U	430 U	400 U	410 U	410 U	380 VJ	390 UJ	410 U
ANTHRACENE	1700000 N		420 U	420 U	430 U	400 U	410 U	410 U	380 UJ	390 UJ	410 U
BAP EQUIVALENT	15 C	3.5	420 U	420 U	430 U	400 U	410 U	410 U	116	390 U	410 U
BAP EQUIVALENT-HALFND	15 C	3.5	420 U	420 U	430 U	400 U	410 U	410 U	346.09 380 UI	390 U	410 U 410 U
BENZO(A)ANTHRACENE	150 C	10	420 U	420 U 420 U	430 U 430 U	400 U 400 U	410 U 410 U	410 U 410 U	380 UJ 100 7	390 UJ 390 UJ	410 U 410 U
BENZO(A)PYRENE	15 C 150 C	3.5	420 U 420 U	420 U 420 U	430 U 430 U	400 U	410 U	410 U	160 3	390 UJ	410 U
BENZO(B)FLUORANTHENE	150 C	350	420 U	420 U	430 U	400 U	410 U	410 U	380 UJ	390 UJ	410 U
BENZO(K)FLUORANTHENE CARBAZOLE	NC C	NC SSU	420 U	420 U	430 U	400 U	410 U	410 U	250 J	390 UJ	410 U
CHRYSENE	15000 C	1100	420 U	420 U	430 U	400 U	410 U	410 U	380 UJ	390 UJ	410 U
DIBENZOFURAN	7800 N		420 U	420 U	430 U	400 U	410 U	410 U	380 UJ	390 UJ	410 U
DIETHYL PHTHALATE	4900000 N		420 U	420 U	430 U	400 U	410 U	410 U	12000	390 UJ	410 U
DI-N-BUTYL PHTHALATE	610000 N		420 U	420 U	430 U	400 U	410 U	410 U	3300	390 UJ	410 U
FLUORANTHENE	230000 N		420 U	420 U	430 U	400 U	410 U	410 U	380 UJ	390 UJ	410 U
INDENO(1,2,3-CD)PYRENE	150 C		420 U	420 U	430 U	400 U	410 Ü	410 U	380 UJ	390 UJ	410 U
NAPHTHALENE	3600 C	0.47	420 U	420 U	430 U	400 U	410 U	410 U	380 U	390 UJ	410 U
PHENANTHRENE	170000 N ⁽⁸⁾	120000 (8)	420 U	420 U	430 U	400 U	410 U	410 U	140 J	390 UJ	410 U
PYRENE	170000 N		420 U	420 U	430 U	400 U	410 U	410 U	380 UJ	390 UJ	410 U
VOLATILES (UG/KG)	. 1,0000 11	, 200000									
ACETONE	6100000 N	4500	17.5 U	17 U	27 U	38 U	490	220 B	38 U	1200	85 U
CARBON DISULFIDE	82000 N		12 U	12 U	13 U	12 U	63	13 U	2 J	11 U	12 U
						•					

ATTACHMENT 1
POSITIVE DETECTIO*
COMPARISON TO DIRECT CONTACT AI CITION OF GROUNDWATER CRITERIA
HUMAN HEALTH RI. SSMENT - UXO 32

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LOCATION	Adjusted US	EDA	USEPA	1	41\$B05	1			419	5B06		
SAMPLE ID	Regiona		Regional	41SB0502	415B0503	41SB0504	41SB0602	41SB0602-AVG	41SB0602-D	41SB0603	41SB0603-AVG	41SB0603-D
SAMPLE DATE	Screening		Screening	19920801	19920801	19920801	19920801	19920801	19920801	19920801	19920801	19920801
	Levels ^{(1,2}		Levels ^(1,2)							ORIG		DUP
SAMPLE CODE				NORMAL	NORMAL	NORMAL	ORIG	AVG	DUP		AVG	
MATRIX	Residential	Soil	Protection of	SO	so	50	so	so	so	so	so	so
SAMPLE TYPE			Groundwater	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION			SSLs	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX		1		SB	SB	SB	SB	SB	SB	SB	SB	SB
TOP DEPTH				5	10	15	5	5	5	10	10	10
ВОТТОМ ФЕРТН				7	12	17	9	9	9	14	14	14
METALS (MG/KG)	1			· · · · · · · · · · · · · · · · · · ·		L		L				
ALUMINUM	7700	l N	55000	884	1960	Tring	1210	1180	1150	2740	2210	1680
ARSENIC	0.39	C	0.0013	17 1	3.2 J	0.5 UJ	11.2 J	5.725	0.5 UJ	· 0.5 UJ	0.5 U	0.5 UJ
BARIUM	1500	Ň	300	43.3 B	36.8 B	84.1	15.4 B	14.3 U	13.2 B	18.5 B	23.65 U	28.8 B
BERYLLIUM	16	N	58	0.3 U	0.6 B	3.8	0.3 U	0.3 U	0.3 U	0.3	0.225	0.3 U
CADMIUM	7	N	1.4	1,2 U	1.2	1.3 U	1.3 U	1.3 U	1.3 U	1.2 U	1.25 U	1.3 U
CALCIUM	NC		NC	304 U	1430	3480	121 U	127 U	133 U	1200 B	862.5 U	525 B
CHROMIUM	12000	N ⁽³⁾	99000000 (3)	2.5 U	8.7	27.7	2.5 U	2.5 U	2.5 U	8.6	5.85	3.1
COBALT	2,3	N	0.49	3.7 U	32.1	70. 9	3.8 U	3.8 U	3.8 U	8.9 B	7.45 U	6 B
COPPER	310	N	51	3.8 B	8.4	25.8	2,5 U	3.3 U	4.1 B	12.7	9.65	6.6
IRON	5500	N	640	10300	55600	79600	1840	1710	1580	63300	41050	18800
LEAD	400	N	14 (4)	3.2 J	29.7 3	6.7 3	3.2 J	5.05	6.9 J	6.3 J	5.25	4.2 J
MAGNESIUM	NC	1-1	NC	79.8 B	417 B	3180	98.2 B	91.1 U	84 B	158 B	186 U	214 B
MANGANESE	180	N	57	4.1	369	219	5.4	5.5	5.6	98.6	64.9	31.2
MERCURY	2.3	N ⁽⁵⁾	0.03	0.1 ∪	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	U 1.0
NICKEL	150	N	48	3.7 U	3.6 U	49	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U	3.8 U
POTASSIUM	NC	\Box	NC	654 B	527 B	3320	460 B	380 U	300 B	404 B	397.5 U	391 B
SELENIUM	39	N	0.95	0.3 U3	0.3 UJ	0.3 UJ	0.7 UJ	0.5 U	0.3 UJ	0.3 UJ	0.3 U	0.3 U)
SILVER	39	N	1.6	1,2 U	4.1	4.1	1.3 U	1.3 U	1.3 U	4.8	2.725	1.3 U
VANADIUM	39	N	180	6.4 B	12.8	125	4.1 B	4.4 U	4.7 B	42.2	28.35	14.5
ZINC	2300	N	680	5.1	18	97.2	5.3	5.9	6.5	11.4	13.35	15.3
MISCELLANEOUS PARAMETERS (%)								-r				1
PERCENT MOISTURE	NC	ليسل	NC NC	NA NA	NANA	NA	NANA	NA	NA NA	NA	. NA	NA
PCBS (UG/KG)		1 - 1			1				Т 44.24	41 U	44.5.0	42 U
AROCLOR-1260	220	C	24	41 U	40 U	41 U	41 U	41 U	41 U	410	41.5 U	42.0
PESTICIDES/PCBS (UG/KG)	1 2000	1 . 1			0.00.1	4411	4111	4.1 U	4.1 U	4.1 U	4.15 U	4.2 U
4,1'-DDD	2000	C	66	4.1 U	0.86 J	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.15 U	4.2 U
4,4'-DDE	1400	C	47 67	4.1 U 4.1 U	4 U	4.1 U 4.1 U	4.1 U 4.1 U	4.1 U	4.1 U	4.1 U	4.15 U	4.2 U
4,4'-DDT ENDOSULFAN II	1700 37000	N	3000	4.1 U	1.5 J	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.15 U	4.2 U
ENDOSOLFAN II ENDRIN	1800	N	440	4.1 U	4 U	4.1 U	4.1 U	4.1 U	4.1 U	4.1 U	4.15 U	4.2 U
GAMMA-CHLORDANE	1600	C ⁽⁶⁾	13 (6)	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.15 U	2.2 U
HEPTACHLOR EPOXIDE	53	C	0.15	2.1 0	2.10	2.1 U	2.1 U	2.1 U	2.1 U	2.1 U	2.15 U	2.2 U
PETROLEUM HYDROCARBONS (MG/KG)	33	<u> </u>	0.15	2.10	2.3	2.10	2.10	2.10		2.10	1, 2,12,0	Lie
TOTAL PETROLEUM HYDROCARBONS	NC		NC	12.2 U	10 U	12.7 U	12.5 U	12.5 U	12.5 U	12.4 U	12.55 U	12.7 U
SEMIVOLATILES (UG/KG)	IVC		nc 1	12.2 0	100	12.7 0	12.50	12.50				
2-METHYLNAPHTHALENE	31000	l N l	750	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
ACENAPHTHYLENE	340000	N ⁽⁷⁾	22000 (7)	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
ANTHRACENE	1700000	N	360000	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
BAP EQUIVALENT	15	Ĉ	3.5	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
BAP EQUIVALENT-HALFND	15	č	3.5	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
BENZO(A)ANTHRACENE	150	Ĭč	10	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
BENZO(A)PYRENE	15	tč	3.5	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
BENZO(B)FLUORANTHENE	150	Č	35	410 Ü	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
BENZO(K)FLUORANTHENE	1500	1 č	350	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
CARBAZOLE	NC	Ť	NC	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
CHRYSENE	15000	c	1100	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
DIBENZOFURAN	7800	Ň	680	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
DIETHYL PHTHALATE	4900000	N	12000	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
DI-N-BUTYL PHTHALATE	610000	N	9200	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
FLUORANTHENE	230000	N_	160000	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
INDENO(1,2,3-CD)PYRENE	150	C	120	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
NAPHTHALENE	3600	Č	0.47	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
PHENANTHRENE	170000	N ⁽⁸⁾	120000 (8)	410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
PYRENE	170000	N		410 U	400 U	420 U	410 U	410 U	410 U	420 U	420 U	420 U
VOLATILES (UG/KG)										,		
ACETONE	6100000	N	4500	9 U	10 U	64 U	9U	9.5 U	10 U	12 U	10.5 U	9 UJ
CARBON DISULFIDE	82000	N	310	12 U	12 U	13 U	12 U	12 U	12 U	12 U	12 U	12 U

ATTACHMENT 1
POSITIVE DETECTIO' SUBSURFACE SOIL
COMPARISON TO DIRECT CONTACT A
HUMAN HEALTH R.
SSMENT - UXO 32

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REPAIR MONTH 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1 1/50 1	TH			5	10	15	2	2	3	1 2	3	2
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FERCENT MOISTURE		N 680	2300	18.6	17.6	53.1	l NA	I NA	NA	NA	NA	NA NA
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PESTICIDES/PCS (UG/KG)		Tr 24	220	45 11	47 11	42.11	NA NA	NA NA	NΔ	NΔ	I NA	NA NA
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1400 C		C 66	2000	4.5 U	4.7 U	4.2 U	I NA	NA NA	I NA	NA NA	NA NA	NA NA
1,70DT									NA NA	NA NA	NA NA	NA .
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GAMMA-CHLORDANE	FAN II	N 3000	37000	4.5 U	4.7 U	4.2 U	NA NA	NA	NA NA	NA NA	NA NA	NA
HEPTACHIOR EPONIDE												NA
PETROLEUM HYDROCARBONS NC NC 12.2 U 12.7 U 12.9 U NA NA NA NA NA NA NA												NA
TOTAL PETROLEUM HYDROCARBONS NC NC 12.2 U 12.7 U 12.9 U NA NA NA NA NA NA NA		C 0.15	53	2.3 U	2,4 U	2.2 U) NA	NA NA	NA NA	NA	NA NA	NA NA
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2-HETHYLRAPHTHALENE		NC	NC I	12.2 U	12.7 U	12.9 0	l NA	I NA	I NA	NA	NA	NA
ACEMAPHTHYLENE 340000 N° 22000 0° 450 U 470 U 420 U NA NA NA NA NA NA NA	LATILES (UG/KG)	T N T 750 T	21000	450.11	470 11	420 11	T NA	T NA	I MA	I MA	1 0/4	NA NA
ANTHRACENE 1700000 N 360000 450 U 470 U 420 U NA NA NA NA NA NA NA NA NA NA NA NA NA												NA NA
SAP EQUIVALENT 15												NA NA
SAP_EOLIVALENT-HALFNO												NA NA
BENZO(A)NTHPACENE 150												NA NA
SENZO(A)PYRENE		C 10	150	450 U	470 U	420 U	NA NA	NA	NA	NA	NA NA	NA NA
DENZOKI/FLUORANTHENE 1500 C 350 450 U 470 U 420 U NA NA NA NA NA NA NA)PYRENE		15	450 U	470 U	420 U				NA NA		NA NA
SEXECKI/FLUORANTIENE 1500 C 350 450 U 470 U 420 U NA NA NA NA NA NA NA)FLUORANTHENE	C 35	150		470 U	420 U				NA NA		NA
CHRYSENE 15000 C 1100)FLUORANTHENE											NA NA
DIBENZOFURAN 7800 N 680												NA NA
DIETHYL PHTHALATE												NA NA
DI-N-BUTYL PHTHALATE												NA NA
FLUORANTHENE 230000 N 160000 450 U 470 U 420 U NA NA NA NA NA NA NA NA NA NA NA NA NA												NA NA
NDEBOY(1,2,3-CD)PYRENE												NA NA
NAPHTHALENE 3600 C 0.47 450 U 470 U 420 U NA NA NA NA NA PHENANTHRENE 170000 № 120000 120000 450 U 470 U 420 U NA NA NA NA NA												NA NA
PHENANTHRENE 170000 M ⁽⁰⁾ 120000 ⁽⁰⁾ 450 U 470 U 420 U NA NA NA NA NA												NA NA
												NA NA
												NA NA
VOLATILES (UG/KG)		J 1 120000 1		-1 - 130 0	1700	1200	1 1771			, (41)	,	
		N 4500	6100000	41 U	30 U	41 U	NA NA	NA NA	NA NA	NA	NA	NA NA
CARBON DISULFIDE 82000 N 310 12 U 13 U 13 U NA NA NA NA NA NA NA												NA NA

ATTACHMENT 1
POSITIVE DETECTION* SUBSURFACE SOIL
COMPARISON TO DIRECT CONTACT AY
HUMAN HEALTH RIX. SSMENT - UXO 32
PAGE 5 OF 8

LOCATION	T		I								
LOCATION SAMPLE ID	Adjusted USEPA)35B02	U32SA05SB01	U32SA06SB01	U32SA06SB02	U32SA07SB02		08SB02		09SB02
	Regional	Regional	U32SA03SB0203	U32SA05SB0102	U32SA06SB0102	U32SA06SB0202	U32SA07SB0202	U32SA08SB0202	U325A08SB0203	U32SA09SB0202	U32SA09SB0203
SAMPLE DATE	Screening	Screening	20101027	20101027	20101027	20101027	20101027	20101027	20101027	20101027	20101027
SAMPLE CODE	Levels ^(1,2)	Levels(1,2)	NORMAL								
MATRIX	Residential Soil		SO SO	so	so	so	so	so	so	so	so
SAMPLE TYPE	i	Groundwater	NORMAL,	NORMAL							
POSITION		SSLs	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP
SUBMATRIX		1	SB								
TOP DEPTH		1	3	2	2	2	2	2	3		SB
воттом рертн	1	l .		3	3	3	3	3	1	2	3
METALS (MG/KG)	I				<u> </u>		. 3		4	3	4
ALUMINUM	7700 N	55000	NA NA	NA NA	NA	NA	NA NA	NA NA	NA NA		
ARSENIC	0.39 C	0.0013	8.77 J	2.69 J	111.7	5.29 J	9.1 1	18.4 J	12.6 J	NA 21.6 J	NA 15.6 7
BARIUM	1500 N		NA NA	NA.	NA NA	NA.	NA NA	NA NA	NA NA	NA NA	15.6 J NA
BERYLLIUM	16 N	58	NA.	NA	NA.	NA NA					
CADMIUM	7 N	1.4	NA NA	NA.	NA NA						
CALCIUM	NC.	NC	NA.	NA NA	NA NA	NA NA	NA.	NA NA	NA .	NA NA	NA NA
CHROMIUM	12000 N ⁽³⁾	99000000 (3)	NA.	NA .	NA NA						
COBALT	2.3 N		NA	NA	NA.	NA.	NA NA				
COPPER	310 N		NA NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
IRON	5500 N		NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
LEAD	400 N	14 (4)	NA NA	NA NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA
MAGNESIUM	NC	NC .	NA	NA	NA	NA_	NA_	NA	NA NA	NA NA	NA NA
MANGANESE	180 N	57	NA NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
MERCURY	2.3 N ⁽⁵⁾	0.03	NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
NICKEL	150 N		NA NA	NA	NA NA	NA NA	NA NA	NA .	NA NA	NA .	NA NA
POTASSIUM	NC NC	NC	NA	NA	NA NA	NA	NA	NA NA	NA NA	NA NA	NA
SELENIUM	39 N	0.95	NA NA	, NA	NA NA	NA NA	NA NA	NA	NA.	NA .	NA NA
SILVER VANADIUM	39 N		NA	NA	NA	NA	NA	NA NA	NA	NA	. NA
ZINC	39 N 2300 N	180	NA	NA	NA	NA.	NA_	NA	NA	NA .	NA .
MISCELLANEOUS PARAMETERS (%)	2300 N	680	NA	NA	NA	NA	NA NA	NA NA	NA NA	NA	NA
PERCENT MOISTURE	NC.	NC 1	NA	NA -					1	r	
PCBS (UG/KG)	I IVC	I NC I	1	I NA	NA NA	NA	NA NA	NA NA	NA	NA	NA NA
AROCLOR-1260	220 C	24	NA	NA NA	NA	NA NA	NA -	NA NA			
PESTICIDES/PCBS (UG/KG)	1 220, 1 0			IVA .	IVA	IVA	I NA	INA	NA	NA NA	NA
4,4'-DDD	2000 C	66	NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA		
4,4'-DDE	1400 C		NA NA	NA NA	NA NA	NA -	NA NA	NA NA	NA NA	NA NA	NA NA
4.4'-DDT	1700 C	67	NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
ENDOSULFAN II	37000 N	3000	NA NA	NA .	NA NA	NA NA	NA_	NA NA	NA NA	NA NA	NA NA
ENDRIN	1800 N		NA NA	NA NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA
GAMMA-CHLORDANE	1600 C ⁽⁶⁾	13 (6)	NA NA	NA	NA NA	NA NA	NA NA				
HEPTACHLOR EPOXIDE	53 C	0.15	NA NA	NA NA	NA	NA	NA NA	NA	NA NA	NA NA	NA NA
PETROLEUM HYDROCARBONS (MG/KG)										167	
TOTAL PETROLEUM HYDROCARBONS	NC	NC	NA	NA	NA NA	NA NA	NA NA	NA	NA NA	NA .	NA NA
SEMIVOLATILES (UG/KG)											
2-METHYLNAPHTHALENE	31000 N	750	NA _	NA .	NA NA	NA NA	NA	NA_	NA NA	NA NA	NA NA
ACENAPHTHYLENE	340000 N ⁽⁷⁾		NA NA	NA NA	NA	NA NA	NA	NA NA	NA NA	NA NA	NA
ANTHRACENE BAR EQUIVALENT	1700000 N		NA	NA NA	NA NA	. NA	NA	NA	NA NA	NA NA	NA NA
BAP EQUIVALENT BAP EQUIVALENT-HALFND	15 C		NA	NA NA	NA	NA NA	NA NA	NA .	NA	NA	NA NA
BENZO(A)ANTHRACENE	15 C 150 C	3.5	NA NA	NA	NA	. NA	NA	NA	NA NA	NA NA	NA NA
BENZO(A)PYRENE	150 C	10	NA NA	NA .	NA	NA	NA NA				
BENZO(B)FLUORANTHENE	150 C	3.5	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA_	NA	NA_
BENZO(K)FLUORANTHENE	1500 C		NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA.	NA.	NA NA
CARBAZOLE	NC C	NC NC	NA NA	NA NA	NA NA	NA NA	NA	. NA	NA	NA	NA
CHRYSENE	15000 C		NA NA	NA NA		NA	NA	NA	NA	NA NA	NA
DIBENZOFURAN	7800 N		NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA
DIETHYL PHTHALATE	4900000 N	12000	NA NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA
DI-N-BUTYL PHTHALATE	610000 N	9200	NA NA	NA	NA NA	NA NA	NA NA	NA	NA	NA	NA
FLUORANTHENE	230000 N		NA NA	NA NA	- NA NA	NA NA					
INDENO(1,2,3-CD)PYRENE	150 C	120	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
NAPHTHALENE	3600 C	0.47	NA NA	NA NA							
PHENANTHRENE	170000 N ⁽⁸⁾	120000 (8)	NA NA	NA I	NA	NA NA	NA NA				
PYRENE	170000 N		NA NA								
VOLATILES (UG/KG)			***		1971	110	1 1/10	. NA		NA .	NA
ACETONE	6100000 N		NA	NA NA	NA NA	NA NA	NA.	NA I	NA I	NA I	NA
CARBON DISULFIDE	82000 N		NA NA								
									110	100	DAM.

ATTACH***ENT 1
POSITIVE DETECTIO*

COMPARISON TO DIRECT CONTACT AF
HUMAN HEALTH RIS
PAGE 6 OF 8

ATTACH***ENT 1
VIBSURFACE SOIL
TION OF GROUNDWATER CRITERIA
SSMENT - UXO 32
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LOCATION SAMPLE ID	Adjusted US Regiona		USEPA Regional	U32SA10SB01 U32SA10SB0102	U32SA11SB01 U32SA11SB0102	U32SA11SB02 U32SA11SB0202	U32SA12SB02 U32SA12SB0202	U32SA13SB02 U32SA13SB0202	U32SA U32SA14SB0102	145B01 U325A145B0103	U32SA14SB02 U32SA14SB0202	U325BS0434 U325BS043401
	Screenin		Screening	20101028	20101028	20101028	20101027	20101027	20101028	20101028	20101028	20101201
SAMPLE DATE SAMPLE CODE	Levels ^{(1,}		Levels ^(1,2)	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
MATRIX	Residential		Protection of	SO	SO	SO	SO	SO	50	SO	SO	SO
SAMPLE TYPE	Residential	3011	Groundwater	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL	NORMAL
POSITION	1		SSLs	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	NOT UNDER CAP	UNDER CAP				
SUBMATRIX	1	Į		SB	SB	SB	SB	SB	SB	SB	SB	SB
TOP DEPTH		- 1		2	2	2	2	2	2	3	2	3
	1			3	3	3	3	3	3	4	3	4
BOTTOM DEPTH METALS (MG/KG)	1				3	,	<u> </u>	L	1 3	-4		*
ALUMINUM	7700	l N	55000	NA NA	NA NA	NA.	NA NA	NA NA				
ARSENIC	0.39	C	0.0013	7.1 J	168	1.88 J	5,93 J	8.45 J	54.4 J	1.12 J	5.58 J	2.9 J
BARIUM	1500	Ň	300	NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA	NA .
BERYLLIUM	16	N.	58	NA	NA NA	NA .	NA	NA NA	NA NA	NANA	NA NA	NA
CADMIUM	7	N	1,4	NA NA	NA.	NA	NA	NA	NA NA	NA NA	NA NA	NA
CALCIUM	NC		NC (3)	NA NA	NA	NA NA	NA	NA NA	NA	NA NA	NA NA	NA NA
CHROMIUM	12000	N ⁽³⁾	99000000 (3)	NA	NA NA	NA	NA NA	NA.	NA NA	NA NA	NA NA	NA NA
COBALT	2.3	N	0.49 51	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
COPPER IRON	310 5500	N	51 640	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
LEAD	400	N	14 (4)	NA NA	NA NA	NA NA	NA NA	5.4				
MAGNESIUM	NC NC	1"	NC NC	NA NA	NA NA	NA.	NA NA	NA				
MANGANESE	180	N	57	NA NA	NA NA	NA NA	NA NA	NA				
MERCURY	2.3	N(2)	0.03	NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA	NA	NA
NICKEL	150	N	48	NA	NA	NA	NA .	NA NA	NA	NA NA	NA .	NA
POTASSIUM	NC NC		NC	NA	NA NA	NA	NA	NA NA	NA .	NA NA	NA NA	NA
SELENIUM	39	N	0.95	NA	NA	NA	NA	NA	NA	NA	NA NA	NA
SILVER	. 39	N	1.6	NA NA	NA	NA	NA NA	NA.	NA NA	NA NA	NA NA	NA NA
VANADIUM	39	N	180	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
ZINC MISCELLANEOUS PARAMETERS (%)	2300	N	680	NA	INA	NA NA	NA	I NA	1 NA	INA	1 19/4	INA .
PERCENT MOISTURE	NC		NC 1	NA NA	NA NA	NA	NA.	NA NA	NA NA	NA NA	NA NA	22
PCBS (UG/KG)	110											
AROCLOR-1260	220	Тс	24	NA NA	NA NA	NA	NA NA	NA	NA NA	NA	NA NA	42 U
PESTICIDES/PCBS (UG/KG)												
4,4'-DDD	2000	С	66	NA .	NA NA	NA	NA.	NA	NA	NA NA	NA NA	NA NA
4,4'-DDE	1400		47	NA	NA	NA NA	NA	NA NA	NA	NA NA	NA NA	NA NA
4,4'-DDT	1700 37000	N O	67 3000	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
ENDOSULFAN II ENDRIN	1800	N	440	NA.	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
GAMMA-CHLORDANE	1600	C(6)	13 (6)	NA NA	NA NA	NA	NA NA	NA				
HEPTACHLOR EPOXIDE	53	T _C	0.15	NA	NA NA	NA NA	NA.	NA NA	NA.	NA	NA NA	NA
PETROLEUM HYDROCARBONS (MG/KG)				· - ·								
TOTAL PETROLEUM HYDROCARBONS	NC		NC	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA	NA	NA
SEMIVOLATILES (UG/KG)					1					I NA	NA.	MA
2-METHYLNAPHTHALENE	31000	N N	750	NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
ACENAPHTHYLENE	340000	N ⁽⁷⁾	22000 (7)	NA NA		NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
ANTHRACENE BAP EQUIVALENT	1700000 15	N C	360000 3.5	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
BAP EQUIVALENT BAP EQUIVALENT-HALFND	15	1	3.5	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA.	NA NA
BENZO(A)ANTHRACENE	150	C	10	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA	NA NA	NA
BENZO(A)PYRENE	15	Č	3.5	NA	NA	NA	NA	NA NA	NANA	NA	NA NA	NA
BENZO(B)FLUORANTHENE	150	Ċ	35	NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA .	NA NA	NA
BENZO(K)FLUORANTHENE	1500	0	350	NA	NA	NA	NA.	NA NA	NA NA	NA	NA NA	NA NA
CARBAZOLE	NC	4_	NC	NA	NA	NA NA	NA	NA NA	NA.	NA NA	NA NA	NA NA
CHRYSENE	15000	20	1100	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
DIBENZOFURAN	7800 4900000	N	680 12000	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
DIETHYL PHTHALATE DI-N-BUTYL PHTHALATE	610000	- N	9200	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA
FLUORANTHENE	230000	N	160000	NA NA	NA	NA	NA	NA NA				
INDENO(1,2,3-CD)PYRENE	150	c	120	NA NA	NA NA	NA NA	NA	NA NA	NA.	NA	NA	NA NA
NAPHTHALENE	3600	Č	0.47	NA	NA	NA	NA_	NA	NA NA	NA_	NA NA	NA NA
PHENANTHRENE	170000	N(8)	120000 (8)	NA NA	NA	NA	NA	NA NA	NA	NA	NA NA	NA
PYRENE	170000	N	120000	NA NA	NA	NA NA	NA	NA	NA.	NA	NA NA	NA
VOLATILES (UG/KG)	I 4.0005	1						NA	NA NA	l NA	[NA	NA NA
ACETONE	6100000	N	4500	NA NA	NA NA	NA NA	NA NA	NA	NA NA	NA NA	NA NA	NA NA
CARBON DISULFIDE	82000	N	310	I NA	I IVA	I IVA .	TiAV	1 1075	1 1965	110		1

ATTACHMENT 1
POSITIVE DETECTIO' SUBSURFACE SOIL
COMPARISON TO DIRECT CONTACT AI CIDON OF GROUNDWATER CRITERIA
HUMAN HEALTH RI. SSMENT - UXO 32

PAG⊵ , UF 8

LOCATION SAMPLE ID	Adjusted U Regiona	al le	USEPA Regional	ı	U325B50934 U325BS093401	U32SBS1334 U32SBS133401	U32SB51823 U32SB5182301
SAMPLE DATE	Screenir	ıg	Screening	3	20101201	20101201	20101201
SAMPLE CODE	Levels ^{(1,}	.2)	Levels ^{(1,2})	NORMAL	NORMAL	NORMAL
MATRIX	Residentia	Soil	Protection	of	l so	so	SO
SAMPLE TYPE			Groundwat	ter	NORMAL	NORMAL	NORMAL
POSITION	i		5SLs		UNDER CAP	UNDER CAP	UNDER CAP
SUBMATRIX	ł				SB		
TOP DEPTH	l					SB	SB
					3	3	2
BOTTOM DEPTH	<u> </u>				4	4	3
METALS (MG/KG)				_			
ALUMINUM	7700	N	55000	╄	NA .	NA .	NA NA
ARSENIC	0.39	<u> </u>	0.0013	╀	5.3 J	2.5 J	88 J
BARIUM	1500	N	300	⊢	NA NA	NA_	NA
BERYLLIUM CADMIUM	16 7	N	58	╀	NA	NA	NA
CALCIUM		N	1.4	╀	NA	NA	NA NA
CHROMIUM	NC 12000	N(3)	NC	(3)	NA	NA	. NA
	12000		99000000	107	NA NA	NA NA	NA
COBALT	2.3	N.	0.49	╀	NA_	NA	NA NA
COPPER	310	N	51	╀	NA NA	NA_	NA NA
RON	5500	N	640	(4)	NA	NA NA	NA NA
EAD	400	N	. 14	(4)	5	14	23
1AGNESIUM	NC 450	+	NC	⊬	NA	NA NA	NA
MANGANESE	180	N	57	╄	NA .	NA	NA NA
MERCURY	2.3	N ⁽⁵⁾	0.03	ـــ	NA .	NA	NA NA
IICKEL	150	I.N.	48	╄	NA	NA NA	NA NA
OTASSIUM	NC	٠	NC	╄	NA_	NA	NA NA
ELENIUM	39	N	0.95	١.	NA	NA	NA
ILVER	39	N	1.6	+-	NA	NA NA	NA
ANADIUM	39	N	180	┸	NA	NA NA	NA NA
INC	2300	N	680		NA	NA NA	NA
MISCELLANEOUS PARAMETERS (%)				,_			
PERCENT MOISTURE	NC		NC	_	23	15	2,7
PCBS (UG/KG) AROCLOR-1260	220	С	34	_	43.0		
PESTICIDES/PCBS (UG/KG)	220	J C	24	٠	43 U	67	11 J
I,4'-DDD	2000	C	66	$\overline{}$	NA NA	NA NA	NA
1,4'-DDE	1400	C	47	⊢	NA NA	NA NA	NA NA
1.4'-DDT	1700	c	67	┼~	NA NA	NA NA	NA NA
NDOSULFAN II	37000	N	3000	+	NA NA	NA NA	NA NA
NDRIN	1800	N	440	+	NA NA	NA NA	NA NA
SAMMA-CHLORDANE	1600	C(6)	13	(6)	NA NA	NA NA	NA NA
EPTACHLOR EPOXIDE	53	C	0.15	۳	NA NA	NA NA	NA NA
PETROLEUM HYDROCARBONS (MG/KG)	33	الكلا	0.15	_	IVA	L NA	NA
OTAL PETROLEUM HYDROCARBONS	NC.	Т	NC		NA	NA	NA
EMIVOLATILES (UG/KG)	NC	_	IVC	_	, NA	NA	NA
-METHYLNAPHTHALENE	31000	N	750		NA NA	NA NA	NA
CENAPHTHYLENE	340000	N(2)	22000	(7)	NA NA	NA NA	NA NA
NTHRACENE	1700000	N N	360000	H	NA NA	NA NA	NA NA
AP EQUIVALENT	15	C	3.5	Н	NA NA	NA NA	NA NA
AP EQUIVALENT-HALFND	15	č	3.5	Н	NA NA	NA NA	NA NA
ENZO(A)ANTHRACENE	150	č	10	Н	NA NA	NA NA	NA NA
ENZO(A)PYRENE	15	č	3.5	Н	NA NA	NA NA	NA NA
		+		-	NA NA		
		101					
ENZO(B)FLUORANTHENE	150	C.	35	Н		NA NA	NA NA
ENZO(B)FLUORANTHENE ENZO(K)FLUORANTHENE	150 1500	c C	35 350	Ė	NA NA	NA	NA
ENZO(B)FLUORANTHENE ENZO(K)FLUORANTHENE ARBAZOLE	150 1500 NC	Ĉ.	35 350 NC	Ė	NA NA	NA NA	NA NA
ENZO(B)FLUORANTHENE ENZO(K)FLUORANTHENE ARBAZOLE HRYSENE	150 1500 NC 15000	C	35 350 NC 1100		NA NA NA	NA NA NA	NA NA NA
enzo(B)fluoranthene enzo(K)fluoranthene arbazole hrysene ibenzofuran	150 1500 NC 15000 7800	C	35 350 NC 1100 680		NA NA NA NA	NA NA NA NA	NA NA NA NA
enzo(B)fluoranthene enzo(K)fluoranthene arbazole hrysene jienzofuran jietnyl phthálate	150 1500 NC 15000 7800 4900000	C N N	35 350 NC 1100 680 12000		NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA
IENZO(B)FLUGRANTHENE ENZOKE/HUGRANTHENE ARBAZOLE HRYSENE JIBENZOFINAN JIETHYL PHTHALATE JI-NBUTYL PHTHALATE	150 1500 NC 15000 7800 4900000 610000	C N N	35 350 NC 1100 680 12000 9200		NA NA NA NA NA NA	NA NA NA NA NA	NA NA NA NA NA
enzo(b)fludranthene enzo(k)fludranthene arbazole hikysene bibenzopuran biethyl phthalate li-rh-butyl phthalate ludranthene	150 1500 NC 15000 7800 4900000 610000 230000	C Z Z Z	35 350 NC 1100 680 12000 9200 160000		NA NA NA NA NA NA NA	NA NA NA NA NA NA	NA NA NA NA NA NA
ENZO(DIFLUGRANTHENE ENZOKISHLUGRANTHENE ABBAZOLE HRYSENE BENZOFURAN JETHYL PHITHALATE H-H-BUTYL PHITHALATE LUORANTHENE UDRONILJ, 3-CO)PYRENE	150 1500 NC 15000 7800 4900000 610000 230000 150	0 N N N N N N N N N N N N N N N N N N N	35 350 NC 1100 680 12000 9200 160000 120		NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA NA
ENZO(9)FLUORANTHENE ENZOKYFLUORANTHENE ARBAZOLE HRYSENE BIBENZOFURAN DIETHYL PHITHALATE JOHNBUTZ PHITHALATE LUORANTHENE WDENOLI, 2,3-COJPYRENE ANHTHALENE	150 1500 NC 15000 7800 4900000 610000 230000 150 3600	C N N N	35 350 NC 1100 680 12000 9200 160000 120 0.47	(8)	NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA NA
enzo(pifluoranthene enzokofluoranthene arbazole Hhysene Benzopuran Eithyl Phitralate -N-Butyl Phitralate Luoranthene Udorno(1,2,3-CD)Pyrene Aphthalene	150 1500 NC 15000 7800 4900000 610000 230000 150 3600 170000	C C N(8)	35 350 NC 1100 680 12000 9200 160000 120 0.47 120000	(8)	NA NA NA NA NA NA NA NA NA NA NA NA NA N	NA NA NA NA NA NA NA NA NA NA NA NA NA N	NA NA NA NA NA NA NA NA NA NA NA NA NA N
ENZO(9)FLUORANTHENE ENZO(NE)LUORANTHENE ARBAZOLE HKYSENE BIBENZOFURAN JETHYL PHITHALATE J-H-BUTYL PHITHALATE LUORANTHENE MOENO(1,2,3-CD)PYRENE APHTHALENE HENANTHENE HENANTHENE	150 1500 NC 15000 7800 4900000 610000 230000 150 3600	C N N N	35 350 NC 1100 680 12000 9200 160000 120 0.47	(8)	NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA NA NA NA	NA NA NA NA NA NA NA NA NA NA NA
enzo(pifluoranthene enzokofluoranthene arbazole Hhysene Benzopuran Eithyl Phitralate -N-Butyl Phitralate Luoranthene Udorno(1,2,3-CD)Pyrene Aphthalene	150 1500 NC 15000 7800 4900000 610000 230000 150 3600 170000	C C N(8)	35 350 NC 1100 680 12000 9200 160000 120 0.47 120000	(8)	NA NA NA NA NA NA NA NA NA NA NA NA NA N	NA NA NA NA NA NA NA NA NA NA NA NA NA N	NA NA NA NA NA NA NA NA NA NA NA NA NA N

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POSITIVE DETECTIO. SUBSURFACE SOIL COMPARISON TO DIRECT CONTACT AND PHOTECTION OF GROUNDWATER CRITERIA HUMAN HEALTH RISK ASSESSMENT - UXO 32

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Footnotes:

- (1) Screening criteria based on EPA Regional Screening Levels (RSLs) Summary Table (November 2010). The adjusted RSLs for residential soils
- (1) Size-lining trained abose of the Aregorian Size-lining Levels (NSLS) sulliniary Table (November 2010). The adjusted KSLS for residential soils represent the one-in-one million (1E-06) cancer risk level or a non-cancer hazard quotient of 0.1 for carcinogenic (C) and non-carcinogenic (N) (2) Concentrations exceeding the referenced groundwater protection values are "italicized" (and highlighted yellow). Concentrations exceeding the referenced RSLs for residential soils are "bolded" (and highlighted orange). Concentrations exceeding both referenced criteria are presented in (3) The value is for trivalent chromium.
- (4) Calculated from the EPA website (http://epa-prgs.ornl.gov/cgi-bin/chemicals/csl_search).
 (5) The value is for mercuric chloride (and other mercury salts).
- (6) The value for chlordane is used as a surrogate.
- (7) The value for acenaphthene is used as a surrogate.
- (r) The value for pyrene is used as a surrogate for phenanthrene.

 Definitions: C = carcinogenic endpoint; N = non-carcinogenic endpoint; NC = no criterion available; NA = Not analyzed Qualifiers: B = present in blank; J = estimated; L = biased low; U = non-detected

ATTACHMENT 2

RAGS-PART D TABLES

RAGS Part D Table 1
Selection of Exposure Pathways

TABLE 1 SELECTION OF EXPOSURE PATHWAYS HUMAN HEALTH RISK ASSESSMENT - UXO 32 INDIAN HEAD, MARYLAND PAGE 1 OF 2

Scenario	Medium	Exposure	Exposure	Receptor	Receptor	Exposure	Type of	Potionals for Call of
Timeframe	Medium	Medium	Point	Population	Age	Route	1 ''	Rationale for Selection or Exclusion
Current/Future	Surface Soil	Surface Soil	UXO 32	Construction	Adult		Analysis	of Exposure Pathway
				Workers	Addit	Ingestion Dermal	Quant	Construction workers may have contact with surface soil during excavation activities.
				Industrial	Adult		Quant	John State Control of the Control of
			İ	Workers	Addit	Ingestion Dermal	Quant	Industrial workers may contact surface soil during normal work activities.
				Recreational	Child		Quant	g work don't not.
				Users	Child	Ingestion	Quant	Child recreational users may contact surface soil while at the site.
				Users	Adult	Dermal	Quant	, and an income
					Adult	Ingestion	Quant	Adult recreational users may contact surface soil while at the site.
		Air		Construction	Adult	Dermal	Quant	<u> </u>
		1		Workers	Adult	Inhalation	Quant	Construction workers may be exposed to fugitive dust and volatile emissions during construction
					· · · · · · · · · · · · · · · · · · ·			activities.
				Industrial	Adult	Inhalation	None	Industrial workers may be exposed to fugitive dust and volatile emissions during normal work
			,	Workers	 			activities.
				Recreational	Child	Inhalation	None	Child recreational users may be exposed to fugitive dust and volatile emissions while at the site
				Users				the site
					Adult	Inhalation	None	Adult recreational users may be exposed to fugitive dust and volatile emissions while at the site
-	Subsurface Soil	Subsurface Soil						The street carrier dates a may be exposed to lugitive dust and volatile emissions while at the site
	Substitute 3011	Substitlace Still		Construction	Adult	Ingestion	Quant	Construction workers may have contact with subsurface soil during excavation activities
				Workers	ļ	Dermal	Quant	ostistibliation workers may have contact with subsurface soil during excavation activities.
		1		Industrial	Adult	Ingestion	Quant	Although exposures to subsurface soil by industrial workers are considered unlikely at the site,
1				Workers	<u> </u>	Dermal	Quant	this scenario was included to aid in future risk management decisions.
				Recreational	Child	Ingestion	Quant	Although exposures to subsurface soil by child recreational users are considered unlikely at the
		1		Users		Dermal	Quant	site, this scenario was included to aid in future risk management decisions.
					Adult	Ingestion	Quant	Although exposures to subsurface soil by adult recreational users are considered unlikely at the
		4.				Dermal	Quant	site, this scenario was included to aid in future risk management decisions.
		Air		Construction	Adult	Inhalation	Quant	Construction workers may be exposed to fugitive dust and volatile emissions during construction
				Workers				activities.
		[Industrial	Adult	Inhalation	None	Although exposures to subsurface soil by industrial workers are considered unlikely at the site,
İ				Workers				this scenario was included to aid in future risk management decisions.
				Recreational	Child	Inhalation	None	Although exposures to subsurface soil by child recreational users are considered unlikely at the
				Users				site, this scenario was included to aid in future risk management decisions.
					Adult	Inhalation		Although exposures to subsurface soil by adult recreational users are considered unlikely at the
					L	_		site, this scenario was included to aid in future risk management decisions.
Future	Surface Soil	Surface Soil	SWMU M-27	Residents	Child	Ingestion	Quant	
					L	Dermal	Quant	
					Adult	Ingestion	Quant	
					1	Dermal	Quant	Although a future residential scenario is considered unlikely at the site,
J		Air		Residents	Child	Inhalation		this scenario was included to aid in future risk management decisions.
	l	ľ			Adult	Inhalation	None	
L					-		.,0	
Г	Subsurface Soil	Subsurface Soil		Residents	Child	Ingestion	Quant	
	İ	1				Dermal	Quant	
- 1	Ì				Adult	Ingestion	Quant	
f						Dermal		Although a future residential annuals to a second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s
				L	·	Denna	Quant	Although a future residential scenario is considered unlikely at the site,

TABLE 1 SELECTION OF EXPOSURE PATHWAYS **HUMAN HEALTH RISK ASSESSMENT - UXO 32** INDIAN HEAD, MARYLAND PAGE 2 OF 2

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
		Air		Residents	Child	Inhalation	None	this scenario was included to aid in future risk management decisions.
					Adult	Inhalation	None	

Quant - Quantitative.

RAGS Part D Table 2

Occurrence, Distribution and Selection Of Chemicals of Potential Concern

LIST OF TABLES RAGS PART D TABLE 2 OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

Table No.

2-1	Surface Soil - Direct Contact
2-2	Surface Soil - Migration From Soil to Groundwater
2-3	Subsurface Soil - Direct Contact
2-4	Subsurface Soil - Migration From Soil to Groundwater

	· · · · · · · · · · · · · · · · · · ·	Ţ		· · · · · · · · · · · · · · · · · · ·	
	·		MDE Cleanup		Dation
CAS		sted USEPA	Standards for		Ration
Number	Chemical	of I RSL	Residential	COPC Flag	Contar
Number		sidential ⁽⁶⁾			Deleti -
1			Soil ⁽⁷⁾		Select
DIOXINS/FU	JRANS (NG/KG)	<u> </u>			
	1,2,3,4,6,7,8,9-OCDD	15000 C	NC	T NO I	BS
	1,2,3,4,6,7,8,9-OCDF	15000 C	NC	NO	BS
	1,2,3,4,6,7,8-HPCDD	450 C	NC	NO	BS
67562-39-4	1,2,3,4,6,7,8-HPCDF	450 C	NC	NO	BS.
55673-89-7	1,2,3,4,7,8,9-HPCDF	450 C	NC	NO	BS
70648-26-9	1,2,3,4,7,8-HXCDF	45 C	NC	YES	AS
57653-85-7	1,2,3,6,7,8-HXCDD	45 C	ÑC	NO	BS
57117-44-9	1,2,3,6,7,8-HXCDF	45 C	NC	NO	BS
	1,2,3,7,8,9-HXCDD	45 C	NC	NO	BS
	1,2,3,7,8-PECDF	150 C	NC	NO	BS
	2,3,4,6,7,8-HXCDF	45 C	NC	NO	BS
57117-31-4	2,3,4,7,8-PECDF	15 C	NC	YES	AS
1746-01-6	2,3,7,8-TCDD	4.5 C	NC	NO	BS
51207-31-9	2,3,7,8-TCDF	45 C	NC	YES	AS
NA	2,3,7,8-TCDD EQUIVALENTS ⁽⁹⁾	4.5 C	NC	YES	AS
METALS (M	IG/KG)				
7440-38-2	ARSENIC	0.39 C	0.43	YES	ASI
7440-39-3	BARIUM	1500 N	1600	NO	BS L
7440-43-9	CADMIUM	7 N	3.9	YES	ASI
7440-47-3	CHROMIUM	12000 N ⁽¹⁰⁾	12000 (10)	NO	BSL
7439-92-1	LEAD	400	400	YES	ASL
7439-97-6	MERCURY	2.3 N ⁽¹¹⁾	2.3	YES	ASL
7782-49-2	SELENIUM	39 N	39	NO	BSL, E
7440-66-6	ZINC	2300 N	2300	YES	ASL
POLYCYCL	IC AROMATIC HYDROCARBONS				7.04
91-57-6	2-METHYLNAPHTHALENE	31000 N	31000	NO I	BSL, B
208-96-8	ACENAPHTHYLENE	40000 N ⁽¹²⁾	470000	NO	BSL
120-12-7	ANTHRACENE	00000 N	2300000	NO	BSL, B
NA	BAP EQUIVALENTS ⁽⁹⁾	15 C	22	YES	ASL
56-55-3	BENZO(A)ANTHRACENE	150 C	220	NO	BSL, B
50-32-8	BENZO(A)PYRENE	15 C	22	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	150 C	220	NO	BSL, B
191-24-2	BENZO(G,H,I)PERYLENE	70000 N ⁽¹³⁾	230000	NO	BSL, B
207-08-9	BENZO(K)FLUORANTHENE	1500 C	2200	NO	BSL, B
218-01-9	CHRYSENE	15000 C	22000	NO	BSL, B
53-70-3	DIBENZO(A,H)ANTHRACENE	15 C	22	NO	BSL
206-44-0	FLUORANTHENE	30000 N	310000	NO	BSL, B
86-73-7	FLUORENE	30000 N	310000	NO	BSL, B
193-39-5	INDENO(1,2,3-CD)PYRENE	150 C	220	NO	BSL, B
91-20-3	NAPHTHALENE	3600 C	160000	NO	BSL, B
85-01-8	PHENANTHRENE	70000 N ⁽¹³⁾	2300000	NO	
129-00-0	PYRENE	70000 N	2300000		BSL, B
.20 00 0	1 1 1 1 1 1 1 1 1	NOUU N	∠3UUUU	NO	BSL, B

CAS Number	Chemical	Frited USEPA Fr RSL of idential ⁽⁶⁾	MDE Cleanup Standards for Residential Soil ⁽⁷⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁸⁾
PCBS (UG/KG					
11096-82-5 A	ROCLOR-1260	220 C	320	YES	ASL

Footnotes:

nale Codes:

- 1 Sample and duplicate are considered as two sefelection as a COPC:
- 2 Values presented are sample-specific quantitatic = Above screening level
- 3 The maximum detected concentration is used for
- 4 95% UTL for surface soil from Background Soil limination as a COPC:
- 5 USEPA Soil Screening Levels (SSLs) available f = Below screening level are the screening level divided by 10 to correspq = Below background concentration
- 6 USEPA RSLs for Chemicals at Superfund Sites, are the screening level divided by 10 to correspc (carcinogens denoted with a "C" flag).
- 7 State of Maryland Department of the Environmer
- 8 The chemical is selected as a COPC if the maxir
- 9 Calculated using half the value of the detection
- 10 The value is for trivalent chromium.
- 11 The value is for mercuric chloride (and other me
- 12 The value for acenaphthene is used as a surror
- 13 The value for pyrene is used as a surrogate.

Shaded criterion indicates that the maximum detectchemical was retained as a COPC.

Definitions:

BAP = Benzo(a)pyrene

C = Carcinogen

CAS = Chemical Abstracts Service

COPC = Chemical of potential concern

J = Estimated value

NA = Not Available

NC = No Criteria

RSL = Regional Screening Level

SSL = Soil Screening Level

USEPA = United States Environmental Protection A

UTL - Upper Tolerance Limit

OCCLOUNDWATER

		1	MDE Cleanup		Rationale for
CAS	Chemical	n of	Standards for	COPC	Contaminant
Number		ater	Protection of	Flag	Deletion or
	į)	Groundwater ⁽⁶⁾		Selection ⁽⁷⁾
DIOXINS/FU	JRANS (NG/KG)				<u>. </u>
3268-87-9	1,2,3,4,6,7,8,9-OCDD		NC	YES	ASL
39001-02-0	1,2,3,4,6,7,8,9-OCDF		NC	NO	BSL
	1,2,3,4,6,7,8-HPCDD		NC	YES	ASL
	1,2,3,4,6,7,8-HPCDF		NC	YES	ASL
	1,2,3,4,7,8,9-HPCDF		NC	YES	ASL
	1,2,3,4,7,8-HXCDF		NC	YES	ASL
	1,2,3,6,7,8-HXCDD		NC	YES	ASL
	1,2,3,6,7,8-HXCDF		NC	YES	ASL
	1,2,3,7,8,9-HXCDD		NC	YES	ASL
	1,2,3,7,8-PECDF		NC	YES	ASL
	2,3,4,6,7,8-HXCDF		NC	YES	ASL
	2,3,4,7,8-PECDF		NC	YES	ASL
	2,3,7,8-TCDD		NC	YES	ASL
	2,3,7,8-TCDF		NC	YES	ASL
NA	2,3,7,8-TCDD EQUIVALENTS		NC	YES	ASL
METALS (M		Į.			1 101
7440-38-2	ARSENIC		0.026	YES	ASL
7440-39-3	BARIUM	; !	6000	NO	BSL
7440-43-9	CADMIUM	(9)	27	YES	ASL
7440-47-3	CHROMIUM		25+09	NO_	BSL
7439-92-1	LEAD	(10)	NC	YES	ASL
7439-97-6	MERCURY		NC	YES	ASL
7782-49-2	SELENIUM		19	NO	BSL, BKG
7440-66-6	ZINC		14000	YES	ASL
	IC AROMATIC HYDROCARB	<u> </u>			
91-57-6	2-METHYLNAPHTHALENE		4400	NO	BSL, BKG
208-96-8	ACENAPHTHYLENE	(11)	100000	NO	BSL
120-12-7	ANTHRACENE		470000	NO	BSL, BKG
NA	BAP EQUIVALENTS ⁽⁸⁾		NC	NO	NTX
56-55-3	BENZO(A)ANTHRACENE		480	NO	BKG
50-32-8	BENZO(A)PYRENE	÷	120	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE		1500	NO	BKG
191-24-2	BENZO(G,H,I)PERYLENE	(12)	680000	NO	BSL, BKG
207-08-9	BENZO(K)FLUORANTHENE		15000	NO	BSL, BKG
218-01-9	CHRYSENE		48000	NO	BSL, BKG
53-70-3	DIBENZO(A,H)ANTHRACEN		460	NO	BSL
206-44-0	FLUORANTHENE		6300000	NO	BSL, BKG
86-73-7	FLUORENE		140000	NO	BSL, BKG
193-39-5	INDENO(1,2,3-CD)PYRENE		4200	NO	BSL, BKG
91-20-3	NAPHTHALENE		150	NO	BKG
85-01-8	PHENANTHRENE	(12) -	470000	NO_	BSL, BKG

OCCUDUNDWATER

CAS Number	Chemical	n of ater	MDE Cleanup Standards for Protection of Groundwater ⁽⁶⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁷⁾
129-00-0	PYRENE		680000	NO	BSL, BKG
PCBS (UG/I 11096-82-5	(G) AROCLOR-1260		NC	YES	ASL

Footnotes:

Codes:

- 1 Sample and duplicate are considered as a copc:
- 2 Values presented are sample-specific quove screening level
- 3 The maximum detected concentration is
- 4 95% UTL for surface soil from Backgroution as a COPC: (Tetra Tech, 2002) ow screening level
- 5 USEPA RSLs for Chemicals at Superfun_{low} background concentration
- 6 State of Maryland Department of the En toxicity criteria
- 7 The chemical is selected as a COPC if the
- 8 Calculated using half the value of the det
- 9 The value is for trivalent chromium.
- 10 Calculated from the USEPA website (ht
- 11 The value for acenaphthene is used as
- 12 The value for pyrene is used as a surro

Shaded criterion indicates that the maximun chemical was retained as a COPC.

Definitions:

BAP = Benzo(a)pyrene

C = Carcinogen

CAS = Chemical Abstracts Service

COPC = Chemical of potential concern

J = Estimated value

NA = Not Available

RSL = Regional Screening Level

SSL = Soil Screening Level

USEPA = United States Environmental Prote

UTL - Upper Tolerance Limit

CAS Number	Chemical	Adjusted USEPA RSL Residential ⁽⁶⁾	MDE Cleanup Standards for Residential Soil ⁽⁷⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁸⁾
METALS (N			,		
7429-90-5	ALUMINUM	7700 N	7800	NO	BKG
7440-38-2	ARSENIC	0.39 C	0.43	YES	ASL
7440-39-3	BARIUM	1500 N	1600	NO	BSL, BKG
7440-41-7	BERYLLIUM	16 N	16	NO	BSL
7440-43-9	CADMIUM	7 N	3.9	NO	BSL
7440-70-2	CALCIUM	NC NC	NC	NO	NUT
7440-47-3	CHROMIUM	12000 N ⁽¹⁰⁾	12000 ⁽¹⁰⁾	NO	BSL, BKG
7440-48-4	COBALT	2.3 N	NA	NO	BKG
7440-50-8	COPPER	310 N	310	NO	BSL
7439-89-6	IRON	5500 N	5500	NO	BKG
7439-92-1	LEAD	400	400	NO	BSL
7439-95-4	MAGNESIUM	NC NC	NC	NO	NUT
7439-96-5	MANGANESE	180 N	160	NO	BKG
7439-97-6	MERCURY	2.3 N ⁽¹¹⁾	2.3	NO	BSL, BKG
7440-02-0	NICKEL	150 N	160	NO	BSL
7440-09-7	POTASSIUM	NC NC	NC	NO	NUT
7782-49-2	SELENIUM	39 N	39	NO	BSL, BKG
7440-22-4	SILVER	39 N	39	NO	BSL, BKG
7440-62-2	VANADIUM	39 N	7.8	NO	BKG
7440-66-6	ZINC	2300 N	2300	NO	BSL
SEMIVOLA	TILES (UG/KG)				<u> </u>
91-57-6	2-METHYLNAPHTHALENE	31000 N	31000	NO	BSL
208-96-8	ACENAPHTHYLENE	340000 N ⁽¹²⁾	470000	NO	BSL
120-12-7	ANTHRACENE	1700000 N	2300000	NO	BSL
NA	BAP EQUIVALENTS(9)	15 C	22	YES	ASL
56-55-3	BENZO(A)ANTHRACENE	150 C	220	YES	ASL
50-32-8	BENZO(A)PYRENE	15 C	22	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	150 C	220	YES	ASL
207-08-9	BENZO(K)FLUORANTHENE	1500 C	2200	NO	BSL
86-74-8	CARBAZÓLE	NC	32000	NO	NTX
218-01-9	CHRYSENE	15000 C	22000	NO	BSL
132-64-9	DIBENZOFURAN	7800 N	7800	NO	BSL
84-66-2	DIETHYL PHTHALATE	4900000 N	6300000	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	610000 N	780000	NO	BSL
206-44-0	FLUORANTHENE	230000 N	310000	NO	BSL
193-39-5	INDENO(1,2,3-CD)PYRENE	150 C	220	NO	BSL
91-20-3	NAPHTHALENE	3600 C	160000	NO	BSL
85-01-8	PHENANTHRENE	170000 N ⁽¹³⁾	2300000	NO	BSL
129-00-0	PYRENE	170000 N	230000	NO	BSL

				<u> </u>	
CAS Number	Chemical	Adjusted JSEPA RSL lesidential ⁽⁶⁾	MDE Cleanup Standards for Residential Soil ⁽⁷⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁸⁾
VOLATILES	S (UG/KG)				<u></u>
67-64-1	ACETONE	6100000 N	7000000	NO	BSL
75-15-0 PCBS (UG/I	CARBON DISULFIDE	82000 N	780000	NO	BSL
	AROCLOR-1260	220 C	320	NO	BSL
PESTICIDE:	S/PCBS (UG/KG)		- 020	110	. 502
72-54-8	4,4'-DDD	2000 C	2700	NO	BSL
72-55-9	4,4'-DDE	1400 C	1900	NO	BSL
50-29-3	4,4'-DDT	1700 C	1900	NO	BSL
	ENDOSULFAN II	37000 N	47000	NO	BSL
72-20-8	ENDRIN	1800 N	2300	NO	BSL
5103-74-2	GAMMA-CHLORDANE	1600 C ⁽¹⁴⁾	1800 (14)	NO	BSL
			70	NO	BSL
	M HYDROCARBONS (MG/KG)	53 C			
NA	TOTAL PETROLEUM HYDROCARBON	NC	NC	NO	NTX

Footnotes:

- 1 Sample and duplicate are considered as two sepa
- 2 Values presented are sample-specific quantitation
- 3 The maximum detected concentration is used for
- 4 95% UTL for clay-like subsurface soil from Backgr
- 5 USEPA Soil Screening Levels (SSLs) available fro are the screening level divided by 10 to correspond
- 6 USEPA RSLs for Chemicals at Superfund Sites, N are the screening level divided by 10 to correspond (carcinogens denoted with a "C" flag).
- 7 State of Maryland Department of the Environment
- 8 The chemical is selected as a COPC if the maximi
- 9 Calculated using half the value of the detection lim
- 10 The value is for trivalent chromium.
- 11 The value is for mercuric chloride (and other mer
- 12 The value for acenaphthene is used as a surroga
- 13 The value for pyrene is used as a surrogate.
- 14 The value for chlordane is used as a surrogate.

Shaded criterion indicates that the maximum detected chemical was retained as a COPC.

Definitions:

BAP = Benzo(a)pyrene C = Carcinogen CAS = Chemical Abstracts Service COPC = Chemical of potential concern

Rationale Codes:

For selection as a COPC:

ASL = Above screening level

For elimination as a COPC:

BSL = Below screening level

BKG = Below background concentration

NUT = Essential nutrient

NTX = No toxicity criteria

OCCUR;ROUNDWATER

CAS Number	Chemical	Protection bundwater	MDE Cleanup Standards for Protection of Groundwater ⁽⁶⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁷⁾
METALS (N					
7429-90-5	ALUMINUM	000	NC	NO	BSL, BKG
7440-38-2	ARSENIC)13	0.026	YES	ASL
7440-39-3	BARIUM	300	6000	NO	BSL, BKG
7440-41-7	BERYLLIUM	58	1200	NO	BSL
7440-43-9	CADMIUM	1.4	27	YES	ASL
7440-70-2	CALCIUM	—VC	NC	NO	NUT
7440-47-3	CHROMIUM	OO ⁽⁹⁾	2E+09 ⁽⁹⁾	NO	BSL, BKG
7440-48-4	COBALT	.49	NA	NO	BKG
7440-50-8	COPPER	51	11000	YES	ASL
7439-89-6	IRON	40	NC	NO	BKG
7439-92-1	LEAD	14 (10)	NC	YES	ASL
7439-95-4	MAGNESIUM	VC	NC	NO	NUT
7439-96-5	MANGANESE	57	950	NO	BKG
7439-97-6	MERCURY	.03	NC	NO	BKG
7440-02-0	NICKEL	48	NC NC	YES	ASL
7440-09-7	POTASSIUM	VC	NC NC	NO	NUT
7782-49-2	SELENIUM	95	19	NO	BSL, BKG
7440-22-4	SILVER	1.6	31	NO	BKG
7440-62-2	VANADIUM	80	730	NO	BSL, BKG
7440-66-6	ZINC	<u>80</u>	14000	NO	BSL
SEMIVOLA	TILES (UG/KG)		14000	110	
91-57-6	2-METHYLNAPHTHALENE	50	4400	NO	BSL
208-96 - 8	ACENAPHTHYLENE	00 (11)	100000	NO	BSL
120-12-7	ANTHRACENE	<u>00</u>	470000	NO	BSL
NA	BAP EQUIVALENTS(8)		NC	NO	NTX
56-55-3	BENZO(A)ANTHRACENE	NC TO	480	YES	ASL
50-32-8	BENZO(A)PYRENE	10	120	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	3.5	1500	YES	ASL
207-08-9	BENZO(K)FLUORANTHENE	35 50		YES	ASL
86-74-8	CARBAZOLE	<u>50</u>	15000	NO NO	NTX
218-01-9	CHRYSENE	<u>00</u> <u>1C</u>	470 48000	NO	BSL
132-64-9	DIBENZOFURAN	<u>00</u> 80	48000 NC	NO	BSL
84-66-2	DIETHYL PHTHALATE	<u>80</u> 00	450000	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	00 00	5000000	NO	BSL
206-44-0	FLUORANTHENE	<u>00</u>	6300000	NO	BSL
193-39-5	INDENO(1,2,3-CD)PYRENE		4200	NO	BSL
91-20-3	NAPHTHALENE	<u>47</u>	150	YES	ASL
85-01-8	PHENANTHRENE	——00 ⁽¹²⁾			BSL
	PYRENE	UU `·-'	470000	NO	I DOL

OCCUR

CAS Number	Chemical	A Protection oundwater SSL ⁽⁵⁾	MDE Cleanup Standards for Protection of Groundwater ⁽⁶⁾	COPC Flag	Rationale for Contaminant Deletion or Selection ⁽⁷⁾
VOLATILES					<u> </u>
67-64-1	ACETONE	<u></u> 500	22000	NO	BSL
75-15-0 PCBS (UG/	CARBON DISULFIDE	3 10	19000	NO	BSL
11096-82-5	AROCLOR-1260				
	S/PCBS (UG/KG)	24	NC	YES	ASL
72-54-8	4,4'-DDD				
72-55-9	4,4'-DDE	66	11000	NO	BSL
50-29-3	4,4'-DDT	47	35000	YES_	ASL
33213-65-9	ENDOSULFAN II	67	1200	YES	ASL
72-20-8	ENDRIN)00	20000	NO	BSL
5103-74-2	GAMMA-CHLORDANE	140	5400	NO	BSL
	HEPTACHLOR EPOXIDE	13 ⁽¹³⁾	NC	NO	BSL
DETROI EII	M HYDDOCADDONG (MC//CO)	.15	25	YES	ASL
NA	TOTAL PETROLEUM HYDROCAR	D/			-
	LIGHTE THOLEOW TITCHOCAN	NC NC	NC NC	NO	NTX

Footnotes:

- 1 Sample and duplicate are considered as two se
- 2 Values presented are sample-specific quantitati
- 3 The maximum detected concentration is used f
- 4 95% UTL for clay-like subsurface soil from Back
- 5 USEPA RSLs for Chemicals at Superfund Sites
- 6 State of Maryland Department of the Environme
- 7 The chemical is selected as a COPC if the maxi
- 8 Calculated using half the value of the detection I
- 9 The value is for trivalent chromium.
- 10 Calculated from the USEPA website (http://epa
- 11 The value for acenaphthene is used as a surro
- 12 The value for pyrene is used as a surrogate.
- 13 The value for chlordane is ussed as a surrogate

Shaded criterion indicates that the maximum detect chemical was retained as a COPC.

Definitions:

BAP = Benzo(a)pyrene
C = Carcinogen
CAS = Chemical Abstracts Service
COPC = Chemical of potential concern
J = Estimated value

Rationale Codes:

For selection as a COPC: ASL = Above screening level.

For elimination as a COPC: BSL = Below screening level

BKG = Below background concentration

NUT = Essential nutrient NTX = No toxicity criteria

RAGS Part D Table 3

Medium-Specific Exposure Point Concentration Summary

LIST OF TABLES RAGS PART D TABLE 3 MEDIUM-SPECIFIC EXPOSURE POINT CONCENTRATION SUMMARY

Table No.

Reasonable Maximum/Central Tendency Exposures

3.1.RME Surface Soil (current)3.2.RME Surface Soil (under cap)3.3.RME Surface Soil (future)

3.4.RME Subsurface Soil

TABLE 3.1.RME EXPOSURE POINT CONCENTRATION SUMMARY REASONABLE MAXIMUM EXPOSURE INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future

Medium: Surface Soil

Exposure Medium: Surface Soil (current)

Exposure Point	Chemical of	Units	Arithmetic	95% UCL	Maximum Concentration	Exposure Point Concentration				
	Potential Concern		Mean	(Distribution)	(Qualifier)	Value	Units	Statistic	Rationale	
Surface Soil					 					
(current)	2,3,7,8-TCDD Equivalents	NA	NA	NA .	NA NA	NA	NA	NA	NA	
	Arsenic	mg/kg	82.6	114 (AG)	423 J	114	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.00	
	Cadmium	mg/kg	0.92	1.8 (G)	5.8	1.8	mg/kg	95% KM (t) UCL	ProUCL 4.1.00	
	Lead	mg/kg	65.1	149 (LN)	263 J	65	mg/kg	Arithmetic Mean	(1)	
	Mercury	NA	NA	NA NA	NA	NA	NA	NA	NA	
	Zinc	NA	NA	NA	NA	NA	NA	NA	NA	
	Benzo(a)pyrene Equivalents	mg/kg	0.24	0.35 (G)	1.2	0.35	mg/kg	95% KM (BCA) UCL	ProUCL 4.1.00	
	Aroclor-1260	mg/kg	0.12	0.25 (G)	0.61	0.25	mg/kg	95% KM (Chebyshev) UCL	ProUCL 4.1.00	

For non-detects, one half the sample quantitation limit was used as a proxy concentration.

AG = Approximate Gamma

G = Gamma

LN = Lognormal

NA = Not Applicable

1 - US EPA recommends the average concentration as the EPC for lead.

TABLE 3.2.RME EXPOSURE POINT CONCENTRATION SUMMARY REASONABLE MAXIMUM EXPOSURE INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future

Medium: Surface Soil

Exposure Medium: Surface Soil (under cap)

Exposure Point	Chemical of	Units	Arithmetic	95% UCL	Maximum Concentration	Exposure Point Concentration				
	Potential Concern		Mean	(Distribution)	(Qualifier)	Value	Units	Statistic	Rationale	
Surface Soil		 								
(under cap)	2,3,7,8-TCDD Equivalents	mg/kg	NA	NA	0.000089	0.000089	mg/kg	Maximum Detected Concentration	(1)	
	Arsenic	mg/kg	36.2	68.1 (N)	110 J	68.1	mg/kg	95% Student's-t UCL	ProUCL 4.1.00	
	Cadmium	mg/kg	NA	NA	69	69.0	mg/kg	Maximum Detected Concentration	(1)	
	Lead	mg/kg	1672	17848 (LN)	9800	1672	mg/kg	Arithmetic Mean	(2)	
	Mercury	mg/kg	NA	NA	3.3 J	3.3	mg/kg	Maximum Detected Concentration	(1)	
	Zinc	mg/kg	NA	NA	3500	3500	mg/kg	Maximum Detected Concentration	(1)	
	Benzo(a)pyrene Equivalents	NA	NA	NA	ÑA	NA	NA	NA	NA NA	
	Aroclor-1260	mg/kg	3.2	8.0 (N)	11	. 8.0	mg/kg	95% KM (t) UCL	ProUCL 4.1.00	

For non-detects, one half the sample quantitation limit was used as a proxy concentration.

LN = Lognormal N = Normal

NA = Not Applicable

1 - There were an insufficient number of samples to calculate statistics, therefore the maximum detected concentration was used as the exposure point concentration.

2 - US EPA recommends the average concentration as the EPC for lead.

TABLE 3.3.RME EXPOSURE POINT CONCENTRATION SUMMARY REASONABLE MAXIMUM EXPOSURE INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future

Medium: Surface Soil

Exposure Medium: Surface Soil (future)

Exposure Point	Chemical of	Units	Arithmetic	95% UCL	Maximum Concentration	Exposure Point Concentration				
	Potential Concern		Mean	(Distribution)	(Qualifier)	Value	Units	Statistic	Rationale	
Surface Soil		<u> </u>	<u> </u>	<u> </u>						
(future)	2,3,7,8-TCDD Equivalents	mg/kg	NA	NA	0.000089	0.000089	mg/kg	Maximum Detected Concentration	(1)	
	Arsenic	mg/kg	77	143 (LN)	423 J	143	mg/kg	95% H-UCL	ProUCL 4.1.00	
	Cadmium	mg/kg	5.2	13.1 (G)	69.0	13.1	mg/kg	95% KM (t) UCL	ProUCL 4.1.00	
	Lead	mg/kg	503	2434 (NP)	9800	503	mg/kg	Arithmetic Mean	(2)	
	Mercury	mg/kg	NA	NA	3.3 J	3.3	mg/kg	Maximum Detected Concentration	(1)	
	Zinc	mg/kg	NA	NA	3500	3500	mg/kg	Maximum Detected Concentration	(1)	
	Benzo(a)pyrene Equivalents	mg/kg	0.24	0.36 (G)	1.2	0.36	mg/kg	95% KM (BCA) UCL	ProUCL 4.1.00	
	Aroclor-1260	mg/kg	0.62	4.4 (LN)	11.0	4.4	mg/kg	99% KM (Chebyshev) UCL	ProUCL 4.1.00	

For non-detects, one half the sample quantitation limit was used as a proxy concentration.

G = Gamma

LN = Lognormal

NA = Not Applicable

NP = Nonparametric

1 - There were an insufficient number of samples to calculate statistics, therefore the maximum detected concentration was used as the exposure point concentration.

2 - US EPA recommends the average concentration as the EPC for lead.

TABLE 3.4.RME **EXPOSURE POINT CONCENTRATION SUMMARY** REASONABLE MAXIMUM EXPOSURE INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future

Medium: Subsurface Soil

Exposure Medium: Subsurface Soil

Exposure Point		Units	Arithmetic		Maximum Concentration			Exposure Point Concentration	
	Potential Concern		Mean	(Distribution)	(Qualifier)	Value	Units	Statistic	Rationale
Subsurface Soil	Aluminum	mg/kg	2272	4820 (G)	7070	4820	mg/kg	95% Approximate Gamma UCL	ProUCL 4.1.00
	Arsenic	mg/kg	32.7	110 (LN)	328 J	110	mg/kg	97.5% KM (Chebyshev) UCL	ProUCL 4.1.00
	Cobalt	mg/kg	4.5	NA	18.9	18.9	mg/kg	Maximum Detected Concentration	(1)
	Iron	mg/kg	6366	9742 (N)	13800	9742	mg/kg	95% Student's-t UCL	ProUCL 4.1.00
	Manganese	mg/kg	31.4	122 (G)	152 J	122	mg/kg	95% KM (Chebyshev) UCL	ProUCL 4.1.00
	Vanadium	mg/kg	7.8	NA	27.4	27.4	mg/kg	Maximum Detected Concentration	(1)
	Benzo(a)pyrene Equivalents	mg/kg	0.27	NA	0.48	0.48	mg/kg	Maximum Detected Concentration	(1)

For non-detects, one half the sample quantitation limit was used as a proxy concentration.

G = Gamma

LN = Lognormal

NA = Not Applicable

N = Normal

1 - There were less than 4 detected results. With less than 4 detections meaningful statistics cannot be computed; therefore, the maximum detected concentration was used as the exposure point concentration.

RAGS Part D Table 4
Values Used For Daily Intake Calculations

LIST OF TABLES RAGS PART D TABLE 4 VALUES USED FOR DAILY INTAKE CALCULATIONS

Table No.	
	Reasonable Maximum Exposures
4.1.RME	Construction Workers Exposed to Surface Soil/Subsurface Soil
4.2.RME	Construction Workers Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.3.RME	Industrial Workers Exposed to Surface Soil/Subsurface Soil
4.4.RME	Industrial Workers Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.5.RME	Child Recreational Users Exposed to Surface Soil/Subsurface Soil
4.6.RME	Child Recreational Users Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.7.RME	Adult Recreational Users Exposed to Surface Soil/Subsurface Soil
4.8.RME	Adult Recreational Users Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.9.RME	Child Residents Exposed to Surface Soil/Subsurface Soil
4.10.RME	Child Residents Exposed to Air Emissions from Surface Soil/Subsurface Soil
4.11.RME	Adult Residents Exposed to Surface Soil/Subsurface Soil
4.12.RME	Adult Residents Exposed to Air Emissions from Surface Soil/Subsurface Soil

TABLE 4.1.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS- SOILS

INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface Soll/Subsurface Soil Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	intake Equation/ Model Name
Ingestion	Construction Workers	Adult	UXO 32	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
J				IR-S	Ingestion Rate	330	mg/day	USEPA, 2002b	
				CF3	Conversion Factor 3	0.000001	kg/mg		CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 2002b	BW x AT
)			. EF	Exposure Frequency	250	days/year	USEPA, 2002b	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				BW	Body Weight	70	kg	USEPA; 1989	
				AT-C	Averaging Time (Cancer)	. 25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	
Dermal	Construction Workers	Adult	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg		
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.3	mg/cm2/event	USEPA, 2004	BW x AT
			1	DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				ĘF	Exposure Frequency	250	days/year	USEPA, 2002b	
				ED	Exposure Duration	1	years	USEPA, 2002b	
				вw	Body Weight	70	kg	USEPA, 1989	
		l		AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
		1		AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 4.61E-08

Cancer Dermal Intake = 1.38E-07

Noncancer Ingestion Intake = 3.23E-06

Noncancer Dermal Intake = 9.69E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.2.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CONSTRUCTION WORKERS - SOILS TO AIR

INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface/Subsurface Soil Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Workers	Adult	UXO 32		Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m³) =
		i		1	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	USEPA, 2002b	<u>CA x ET x EF x ED</u>
				EF	Exposure Frequency	250	days/year	USEPA, 2002b	AT x 24 hours/day
				ED	Exposure Duration	. 1	years	USEPA, 2002b	711 X 24 1100131000y
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	OA (4/DEE 4/4/E) 2
				AT-N	Averaging Time (Non-Cancer)	365	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				PEF	Particulate Emission Factor	1.43E+06	m3/ka	USEPA, 2002a	!
es:	<u> </u>			VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook, USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 3.26E-03

Noncancer Inhalation Intake = 2.28E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.3.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS REASONABLE MAXIMUM EXPOSURE - INDUSTRIAL WORKERS - SOIL

INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface Soil/Subsurface Soil Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units -	Rationale/ Reference	· Intake Equation/ Model Name
Ingestion	Industrial Workers	Adult	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002a	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100 ,	mg/day	USEPA, 2002b	
				CF3	Conversion Factor 3	0.000001	kg/mg		CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 2002b	BW x AT
				ĖF	Exposure Frequency	250	days/year	USEPA, 2002b	
				ED	Exposure Duration	. 25	years	USEPA, 2002b	·
				BW	Body Weight	70	kg .	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	
Dermal	Industrial Workers	Adult	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg		
				SA	Skin Surface Available for Contact	3300	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				EV ,	Events Frequency	1	events/day	USEPA, 2004	
			1	EF	Exposure Frequency	250	days/year	USEPA, 2002b	
				ED	Exposure Duration	25	years	USEPA, 1989	
				вw	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
			<u> </u>	AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A.

USEPA, 2002a:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2002b: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Oermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Cancer Ingestion Intake = 3.49E-07

Cancer Dermal Intake = 2.31E-06

Noncancer Ingestion Intake = 9.78E-07

Noncancer Dermai Intake # 6.46E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal intake x Absorption Factor / Dermal Reference Dose

TABLE 4.4.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - INDUSTRIAL WORKERS - SOIL TO AIR

INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface/Subsurface Soil

Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Industrial Workers	Adult	UXO 32	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m³) =
				cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	
				ET	Exposure Time	8	hours/day	(1)	<u>CA x ET x EF x ED</u>
				EF	Exposure Frequency	250	days/year	USEPA, 2002a	AT x 24 hours/day
	}			ED	Exposure Duration	25	years	USEPA, 2002a	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	CA = (1/PEF + 1/VF) x Cs
				AT-N	Averaging Time (Non-Cancer)	9125	days	USEPA, 1989	5/(1/ E. 7 1/41 / X 63
				PEF	Particulate Emission Factor	3.23E+09	m3/kg	USEPA 2010	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	· · · · · · · · · · · · · · · · · · ·
				Q/C	Inverse of mean concentration at	87.36898	g/m2-s per	USEPA 2010	
					center of source		kg/m3		·
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	4.29	m/sec	USEPA 2010	
	ĺ	İ		V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
	<u> </u>			F(x)	Function dependent of Um/Ut	0.0993	unitless	USEPA 2010	

Notes:

1 - Length of typical work day.

Sources

USEPA, 1989: Risk Assessment Guidance for Superfund, Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook. USEPA/600/8-95/002FA.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.isd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Cancer Inhalation Intake = 8,15E-02

Noncancer Inhalation Intake = 2.28E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.5.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CHILD RECREATIONAL USERS - SOILS INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface Soil/Subsurface Soil Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Child	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) ≠
	1			IR-S	Ingestion Rate	200	mg/day	USEPA, 1991	, 5 5 3/
				CF3	Conversion Factor 3	0.000001	kg/mg	**	CS x IRS x CF3 x Fi x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1991	BW x AT
				EF	Exposure Frequency	52	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2). USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15 .	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	
Dermal	Recreational User	Child	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	0.000001	kg/mg	-	
		·		SA	Skin Surface Available for Contact	2.800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
	ĺ			SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				ΕV	Events Frequency	1 .	events/day	USEPA, 2004	-
				EF	Exposure Frequency	52	days/year	(1)	
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	

Notes:

- 1 Professional judgment. Assume one day a week.
- 2 Children will be evaluated as one age group (0 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, children recreational users will be evaluated as two age groups, 0 2 years and 2 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989; Risk Assessment Guidance for Superfund, Vol 1; Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1991; Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. OSWER Directive 9285.6-03.

USEPA, 2002: Calculating Upper Contidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285,6-10, December.

USEPA, 2004: Risk Assessment Guldance for Superfund (Part E, Supplemental Guldance for Dermal Risk Assessment) Final, EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 1.63E-07 Cancer Dermai Intake (Age 0 - 6) = 4.56E-07

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 5.43E-08 Cancer Dermal Intake (Age 0 - 2) = 1.52E-07

Cancer Ingestion Intake (Age 2 - 6) = 1.09E-07 Cancer Dermal Intake (Age 2 - 6) = 3.04E-07

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.90E-06

Noncancer Dermal Intake = 5.32E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.6.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CHILD RECREATIONAL USERS - SOILS TO AIR

INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface/Subsurface Soil

Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Recreational User	Child	UXO 32	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m³) =
				CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	,
				ĒΤ	Exposure Time	4	hours/day	(1)	CA x ET x EF≪ ED
				EF	Exposure Frequency	52	days/year	(1)	AT x 24 hours/day
				ED1	Exposure Duration (Age 0 - 2)	2	years	(2), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(2), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
	[AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
	-			PEF	Particulate Emission Factor	3.23E+09	m3/kg	USEPA 2010	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at	87.36898	g/m2-s per	USEPA 2010	
					center of source		kg/m3		
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	rn/sec	USEPA 2010	
				Um	Mean annual wind speed	4.29	m/sec	USEPA 2010	
				V	Fraction of vegetative cover	0.5	unitless .	USEPA 2010	
-,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				F(x)	Function dependent of Um/Ut	0.0993	unitless	· USEPA 2010	

- 1 Professional judgment. Assume one day a week.
- 2 Children will be evaluated as one age group (0 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, children recreational users will be evaluated as two age groups, 0 2 years and 2 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Cancer inhalation intake (Age 0 - 6) = 2.04E-03

Noncancer Inhalation Intake = 2.37E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 0 - 2) = 6.78E-04 Cancer Inhalation Intake (Age 2 - 6) = 1.36E-03

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.7.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SOILS

INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface Soil/Subsurface Soil Exposure Medium: Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1991	
				CF3	Conversion Factor 3	1.0E-06	kg/mg		CS x IRS x CF3 x FI x EF x ED
				FI	Fraction Ingested	1	unitless		BW x AT
	1			EF	Exposure Frequency	52	days/year	(1)	·
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	, '
				ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	1
				BW	Body Weight	70	kg	USEPA, 1989	
	1			AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
· · · · · · · · · · · · · · · · · · ·				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Recreational User	Adult	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
	}				Conversion Factor 3	1.0E-06	kg/mg		,
	<u> </u>			SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x EC
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2/event .	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unilless	USEPA, 2004	
				EV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	52	days/year	(1)	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	
	1			ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

- 1 Professional judgment. Assume one day a week.
- 2 Adults will be evaluated as one age group (7 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, adult recreational users will be evaluated as two age groups, 7 16 years and 16 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

USEPA, 1989: Risk Assessment Guidance for Superfund, Vol 1: Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1991; Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

USEPA, 2002: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285 6-10, December

USEPA, 2004: Risk Assessment Guidance for Superlund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 6 - 30) ≈ 6.98E-08 Cancer Dermal Intake (Age 6 - 30) = 2.78E-07

Mulagenic Chemicals

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 2.04E-07

Noncancer Dermal Intake = 8.12E-07

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Stope Factor

Cancer risk from dermal contact # Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Stope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Inlake x Absorption Factor / Dermal Reference Dose

TABLE 4.8.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RECREATIONAL USERS - SOILS TO AIR INDIAN HEAD, MARYLAND

Scenario Timeframe: Current/Future Medium: Surface/Subsurface Soil

Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Recreational User	Adult	UXO 32	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m³) =
				cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	, , , , , , , , , , , , , , , , , , , ,
				ET	Exposure Time	4	hours/day	(1)	CA x ET x EF x ED
				EF	Exposure Frequency	52	days/year	(1)	AT x 24 hours/day
				ED1	Exposure Duration (Age 6 - 16)	10	years	(2), USEPA, 1989, 2005	·
				ED2	Exposure Duration (Age 16 - 30)	14	years	(2), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
	·			AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	, , , , , , , , , , , , , , , , , , , ,
				AT-N	Averaging Time (Non-Cancer)	8760	days	USEPA, 1989	
				PEF	Particulate Emission Factor	3.23E+09	m3/kg	USEPA 2010	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
				Q/C	Inverse of mean concentration at	87.36898	g/m2-s per	USEPA 2010	
					center of source		kg/m3		
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	4.29	m/sec	USEPA 2010	
			•	٧	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0993	unitless	USEPA 2010	

Notes:

- 1 Professional judgment. Assume one day a week.
- 2 Adults will be evaluated as one age group (7 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, adult recreational users will be evaluated as two age groups, 7 16 years and 16 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1997: Exposure Factors Handbook, USEPA/600/8-95/002FA,

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Noncarcinogenic Chemicals

Cancer Inhalation Intake (Age 6 - 30) = 8.14E-03

Noncancer inhalation Intake = 2.37E-02

Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 3.39E-03

Cancer Inhalation Intake (Age 16 - 30) = 4.75E-03

Cancer risk from ingestion ≈ Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.9.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS - SOILS

INDIAN HEAD, MARYLAND

Scenario Timeframe: Future

Medium: Surface Soil/Subsurface Soil Exposure Medium: Surface/Subsurface Soil

Exposure Roule	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Resident	Child	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	200	mg/day	USEPA, 1991	
				CF3	Conversion Factor 3	1.0E-06	kg/mg		CS x IAS x CF3 x F1 x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA. 199;	BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	<u> </u>
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1). USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	
Dermal	Resident	Child	UXO 32	cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) =
				CF3	Conversion Factor 3	1 E-06	kg/mg		, (
				SA	Skin Surface Available for Contact	2,800	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unitless	USEPA, 2004	
				ΕV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
	İ	ŀ		ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	15	kg	USEPA, 1989	•
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2,190	days	USEPA, 1989	

^{1 -} Children will be evaluated as one age group (0 - 5 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children will be evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989; Risk Assessment Guidance for Superfund, Vol. 1; Human Health Evaluation Manual, Part A. EPA/540/1-86/060.

USEPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x FI x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 6) = 1.10E-06 Cancer Dermai Intake (Age 0 - 6) = 3.07E-06

Mutagenic Chemicals

Cancer Ingestion Intake (Age 0 - 2) = 3.65E-07 Cancer Dermai Intake (Age 0 - 2) = 1.02E-06

Cancer Ingestion Intake (Age 2 - 6) = 7.31E-07 Cancer Dermal Intake (Age 2 - 6) = 2.05E-06

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.28E-05

Noncancer Dermal Intake = 3.58E-05

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.10.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - CHILD RESIDENTS SOILS TO AIR

INDIAN HEAD, MARYLAND

Scenario Timeframe: Future

Medium: Surface/Subsurface Soil

Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Resident	Child	UXO 32	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m³) =
				cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	• •
				ET	Exposure Time	24	hours/day	USEPA, 1991	CA x ET x EF x ED
				EF	Exposure Frequency	350	days/year	USEPA, 1991	AT x 24 hours/day
				ED1	Exposure Duration (Age 0 - 2)	2	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 2 - 6)	4	years	(1), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	2190	days	USEPA, 1989	
		-		PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA 2004	
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	
]			Q/C	Inverse of mean concentration at	73.95045	g/m2-s per	USEPA 2010	
					center of source		kg/m3		
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	
		j		V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

1 - Children will be evaluated as one age group (0 - 6 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential children will be evaluated as two age groups, 0 - 2 years and 2 - 6 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Noncarcinogenic Chemicals

Cancer Inhalation Intake (Age 0 - 6) = 8.22E-02

Noncancer Inhalation Intake = 1.92E+00

Mutagenic Chemicals

Cancer inhalation Intake (Age 0 - 2) = 2.74E-02

Cancer Inhalation Intake (Age 2 - 6) = 5.48E-02

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Stope Factor Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

TABLE 4.11.RME VALUES USED FOR DAILY INTAKE CALCULATIONS REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - SOILS INDIAN HEAD, MARYLAND

Scenario Timeframe: Future
Medium: Surface Soil/Subsurface Soil
Exposure Medium: Surface/Subsurface Soil

Exposure Roule	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	intake Equation/ Model Name
Ingestion	Resident	Adult	UXO 32	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USÉPA, 2002	Intake (mg/kg/day) =
				IR-S	Ingestion Rate	100	mg/day	USEPA, 1991	
				CF3	Conversion Factor 3	1.0E-06	kg/mg		CS x IRS x CF3 x F1 x EF x ED
				FI	Fraction Ingested	1	unitless	USEPA, 1991	BW x AT
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1). USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1). USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1989	0
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	
Dermal	Resident	Adult	UXO 32	CS	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002	Dermally Absorbed Dose (mg/kg/day) ≈
				CF3	Conversion Factor 3	1.0E-06	kg/mg	••	
				SA	Skin Surface Available for Contact	5,700	cm2	USEPA, 2004	CS x CF3 x SA x SSAF x DABS x EV x EF x ED
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2/event	USEPA, 2004	BW x AT
				DABS	Absorption Factor	Chemical Specific	unilless	USEPA, 2004	
				ΕV	Events Frequency	1	events/day	USEPA, 2004	
				EF	Exposure Frequency	350	days/year	USEPA, 1991	
				ED1	Exposure Duration (Age 6 - 16)	10	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	
				BW	Body Weight	70	kg	USEPA, 1989	
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8,760	days	USEPA, 1989	

Notes

1 - Adults will be evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults will be evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1; Human Health Evaluation Manual, Part A.

USEPA, 1991; Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

USEPA, 2002:Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. OSWER 9285.6-10, December.

USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

Unit Intake Calculations

Incidental Ingestion Intake = (IR-S x CF3 x Fl x EF x ED)/(BW x AT)

Dermal Intake = (CF3 x SA x SSAF x EF x ED)/(BW x AT)

Non-Mutagenic Chemicals

Mulagenic Chemicals

Cancer Ingestion Intake (Age 16 \cdot 30) = 2.74E-07 Cancer Dermai Intake (Age 16 \cdot 30) = 1.09E-06

Noncarcinogenic Chemicals

Noncancer Ingestion Intake = 1.37E-06

Noncancer Dermal Intake = 5.47E-06

Cancer risk from ingestion = Soil concentration x Cancer Ingestion Intake x Oral Cancer Slope Factor

Cancer risk from dermal contact = Soil concentration x Cancer Dermal Intake x Absorption Factor x Dermal Cancer Slope Factor

Hazard Index from ingestion = Soil concentration x Noncancer Ingestion Intake / Oral Reference Dose

Hazard Index from dermal contact = Soil concentration x Noncancer Dermal Intake x Absorption Factor / Dermal Reference Dose

TABLE 4.12.RME

VALUES USED FOR DAILY INTAKE CALCULATIONS

REASONABLE MAXIMUM EXPOSURE - ADULT RESIDENTS - SOILS TO AIR

INDIAN HEAD, MARYLAND

Scenario Timeframe: Future Medium: Surface/Subsurface Soil

Exposure Medium: Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	intake Equation/ Model Name
Inhalation	Resident	Adult	UXO 32	CA	Chemical concentration in air	Calculated	mg/m3	USEPA, 2002a	Exposure Concentration (mg/m³) =
				cs	Chemical concentration in soil	Max or 95% UCL	mg/kg	USEPA, 2002b	*
				EΤ	Exposure Time	24	hours/day	USEPA, 1991	CAXETXEFXED
				EF	Exposure Frequency	350	days/year	USEPA, 2002a	AT x 24 hours/day
				ED1	Exposure Duration (Age 6 - 16)	10 "	years	(1), USEPA, 1989, 2005	
				ED2	Exposure Duration (Age 16 - 30)	14	years	(1), USEPA, 1989, 2005	CA = (1/PEF + 1/VF) x Cs
				AT-C	Averaging Time (Cancer)	25,550	days	USEPA, 1989	
				AT-N	Averaging Time (Non-Cancer)	8760	days	USEPA, 1989	Q / C × 3600
	į			PEF	Particulate Emission Factor	1.10E+10	m3/kg	USEPA 2004	PEF =
				VF	Volatilization Factor	Chemical-specific	m3/kg	USEPA, 2002a	$0.036 \times (1 - V) \times (U_{m} / U_{l})^{2} \times F(x)$
				Q/C	Inverse of mean concentration at	73.95045	g/m2-s per	USEPA 2010	
					center of source		kg/m3		$F(x) = 0.18 \cdot (8x^3 + 12x) \cdot exp(-x^2)$
				Ut	Equivalent threshold of wind velocity at 7m.	11.32	m/sec	USEPA 2010	'
				Um	Mean annual wind speed	3.84	m/sec	USEPA 2010	x = 0.886 * Ut / Um
				V	Fraction of vegetative cover	0.5	unitless	USEPA 2010	
				F(x)	Function dependent of Um/Ut	0.0345	unitless	USEPA 2010	

Notes:

Sources:

USEPA, 1989: Risk Assessment Guidance for Superfund. Vol 1: Human Health Evaluation Manual, Part A. USEPA/540/1-86/060.

USEPA, 1991: Risk Assessment Guidance for Superfund - Supplemental Guidance- Standard Default Exposure Factors Interim Final.

USEPA, 2002a: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24.

USEPA, 2002b: Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites OSWER 9285.6-10.

USEPA, 2010: Soil Screening Guidance calculation Internet site at http://risk.lsd.ornl.gov/calc_start.htm. Site-specific values for Philadelphia, Pennsylvania.

Unit Intake Calculations

Unit Exposure Concentration = (ET x EF x ED)/(AT x 24 hours/day)

Non-Mutagenic Chemicals

Noncarcinogenic Chemicals

Noncancer Inhalation Intake = 9.59E-01

Cancer Inhalation Intake (Age 6 - 30) = 3.29E-01 Mutagenic Chemicals

Cancer Inhalation Intake (Age 6 - 16) = 1.37E-01

Cancer Inhalation Intake (Age 16 - 30) = 1.92E-01

Cancer risk from ingestion = Air concentration x Cancer Inhalation Intake x Inhalation Cancer Slope Factor Hazard Index from ingestion = Air concentration x Noncancer Inhalation Intake / Inhalation Reference Dose

^{1 -} Adults will be evaluated as one age group (7 - 30 years) for non-mutagenic chemicals. For chemicals that act via the mutagenic mode of action, residential adults will be evaluated as two age groups, 7 - 16 years and 16 - 30 years in accordance with USEPA's Supplemental Guidance of Assessing Susceptibility from Early-Life Exposure to Carcinogens (USEPA, 2005).

RAGS Part D Table 5

Non-Cancer Toxicity Data

LIST OF TABLES RAGS PART D TABLE 5 NON-CANCER TOXICITY DATA

Table No.

5-1 Non-Cancer Toxicity Data - Oral/Dermal5-2 Non-Cancer Toxicity Data - Inhalation

TABLE 5.1 NON-CANCER TOXICITY DATA -- ORAL/DERMAL UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency	Absorbed R	D for Dermal ⁽²⁾	Primary Target	Combined Uncertainty/Modifying	RfD:Target Organ(s)	
Concern	<u> </u>	Value	Units	for Dermai ⁽¹⁾	Value	Units	Organ(s)	Factors	Source(s)	Date(s) (MM/DD/YYYY
Dioxins/Furans										
2,3,7,8-TCDD Equivalents	Chronic	1.0E-09	mg/kg/day	1	1.0E-09	mg/kg/day	NA	NA I	Cal EPA	9/2009
PCBs							· · · · · · · · · · · · · · · · · · ·		Our Er A	3/2003
Aroclor-1260	NA	NA	NA	NA	NA	NA I	NA NA	NA T	NA NA	NA NA
Semivolatile Organic Compour								·	11/1	100
Benzo(a)pyrene Equivalents	NA NA	NA	NA	NA .	NA	I NA I	NA	NA I	NA NA	NA NA
Inorganics				<u> </u>				1	- IVA	INA
Aluminum	Chronic	1.0E+00	mg/kg/day	1	1.0E+00	mg/kg/day	CNS	100	PPRTV	10/23/2006
Arsenic	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Skin, CVS	3/1	IBIS	
Cadmium	Chronic	5.0E-04	mg/kg/day	0.05	2.5E-05	mg/kg/day	Kidney	10/1	IRIS	3/14/2011
Cobalt	Subchronic	3.0E-03	mg/kg/day	1	3.0E-03	mg/kg/day	Thyroid	300/1	PPRTV	3/14/2011
	Chronic	3.0E-04	mg/kg/day	1	3.0E-04	mg/kg/day	Thyroid	3000/1		8/25/2008
Iron	Chronic	7.0E-01							PPRTV	8/25/2008
Lead	NA NA	NA NA	mg/kg/day NA	NA NA	7.0E-01	mg/kg/day	G\$	1.5	PPRTV	9/11/2006
			INA	NA NA	NA NA	NA NA	NA	NA NA	NA	NA
Manganese ⁽³⁾	Chronic	2.4E-02	mg/kg/day	0.04	9.6E-04	mg/kg/day	CNS	1	IRIS	3/14/2011
Mercury ⁽⁴⁾	Chronic	3.0E-04	mg/kg/day	0.07	2.1E-05	mg/kg/day	Autoimmune	1000/1	IRIS	3/14/2011
Vanadium	Subchronic	1.0E-02	mg/kg/day	1	1.0E-02	mg/kg/day	Kidney	300	ATSDR	9/2009
	Chronic	5.0E-03	mg/kg/day	1	5.0E-03	mg/kg/day	Kidney	300	ORNL	11/2010
Zinc	Chronic	3.0E-01	mg/kg/day	1	3.0E-01	mg/kg/day	Blood	3/1	IRIS	3/14/2011

Notes:

- 1 U.S. EPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
- 2 Adjusted dermal RfD = Oral RfD x Oral Absorption Efficiency for Dermal.
- 3 Adjusted IRIS value in accordance with recommendations on IRIS.
- 4 Values for mercuric chloride and other mercury salts.

Definitions:

ATSDR = Agency for Toxic Substances and Disease Registry.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

CNS = Central nervous system

CVS = Cardiovascular system

GS = Gastrointestinal system

IRIS = Integrated Risk Information System

NA = Not Available.

ORNL - Oak Ridge National Laboratory

PPRTV = Provisional Peer Reviewed Toxicity Value.

TABLE 5.2 NON-CANCER TOXICITY DATA -- INHALATION UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential	Chronic/ Subchronic	Inhalation RfC		Extrapo	lated RfD ⁽¹⁾	Primary Target	Combined Uncertainty/Modifying	RfC : Target Organ(s)	
Concern		Value	Units	Value	Units	Organ(s)	Factors	Source(s)	Date(s)
Dioxins/Furans									
2,3,7,8-TCDD Equivalents	Chronic	4.0E-08	mg/m3	1.1E-08	(mg/kg/day)	NA	NA T	Cal EPA	9/2009
PCBs					-1			Outern	3/2009
Aroclor-1260	NA	NA	NA	NA	NA	NA NA	NA I	NA NA	NA NA
Semivolatile Organic Compounds									IVA
Benzo(a)pyrene Equivalents	NA	NA	NA	NA	T NA T	NA NA	NA NA	NA	T NA
Inorganics							1		I IVA
Aluminum	Chronic	5.0E-03	mg/m3	1.4E-03	(mg/kg/day)	CNS	300	PPRTV	10/23/2006
Arsenic	Chronic	1.5E-05	mg/m3	4.3E-06	(mg/kg/day)	NA	NA NA	Cal EPA	9/2009
Cadmium	Chronic	1.0E-05	mg/m3	2.9E-06	(mg/kg/day)	Kidney	9/1	ATSDR	9/2009
Cobalt	Subchronic	2.0E-05	mg/m3	5.7E-06	(mg/kg/day)	Respiratory	100/1	PPRTV	8/25/2008
	Chronic	6.0E-06	mg/m³	1.7E-06	(mg/kg/day)	Respiratory	300/1	PPRTV	-
ron	NA	NA	NA	NA	NA NA	NA	NA NA	. NA	8/25/2008
Lead	NA	NA	NA	NA	NA 1	NA NA	NA NA		NA NA
Manganese ⁽²⁾	Chronic	5.0E-05	mg/m³	1.4E-05	(mg/kg/day)	CNS	1000/1	NA IDIO	NA NA
Mercury ⁽³⁾	Chronic	3.0E-05	mg/m³	8.6E-06	(mg/kg/day)	CNS, Kidney	NA	IRIS	3/14/2011
Vanadium	NA	NA	NA	NA	NA NA	NA NA	NA NA	Cal EPA	9/2009
Zinc	NA I	NA	NA	NA	NA NA	NA NA	NA NA	NA NA	NA NA

Notes:

- 1 Extrapolated RfD = RfC *20m3/day / 70 kg
- 2 Adjusted IRIS value in accordance with recommendations on IRIS.
- 3 Values for mercuric chloride and other mercury salts.

Definitions:

ATSDR = Agency for Toxic Substances and Disease Registry.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

CNS = Central Nervous System

IRIS = Integrated Risk Information System

NA = Not Applicable

PPRTV = Provisional Peer Reviewed Toxicity Value.

RAGS Part D Table 6
Cancer Toxicity Data

LIST OF TABLES RAGS PART D TABLE 6 CANCER TOXICITY DATA

Table No.

6-1 Cancer Toxicity Data - Oral/Dermal6-2 Cancer Toxicity Data - Inhalation

TABLE 6.1 CANCER TOXICITY DATA -- ORAL/DERMAL UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential	Oral Cancer	Slope Factor	Oral Absorption Efficiency		cer Slope Factor ermal ⁽²⁾	Weight of Evidence/ Cancer Guideline	Ora	al CSF
Concern	Value	Units	for Dermal ⁽¹⁾	Value	Units	Description	Source(s)	Date(s) (MM/DD/YYYY)
Dioxins/Furans							Cal EPA	
2,3,7,8-TCDD Equivalents	1.30E+05	(mg/kg/day) ⁻¹	1	1.3E+05	(mg/kg/day)-1	B2 / Probable human carcinogen	Cal EPA	9/2009
PCBs								
Aroclor-1260	2.00E+00	(mg/kg/day) ⁻¹	1	2.00E+00	(mg/kg/day) ⁻¹	B2 / Probable human carcinogen	USEPA(1)	9/1996
Semivolatile Organic Compoun	ds							
Benzo(a)pyrene Equivalents	7.3E+00	(mg/kg/day) ⁻¹	1	7.3E+00	(mg/kg/day) ⁻¹	B2 / Probable human carcinogen	IRIS	3/14/2011
Inorganics								
Aluminum	NA .	NA	NA	NA	NA	NA	NA	NA
Arsenic	1.5E+00	(mg/kg/day) ⁻¹	1	1.5E+00	(mg/kg/day) ⁻¹	A / Known human carcinogen	IRIS	3/14/2011
Cadmium	NA	NA	. NA	NA	NA	B1 / Probable human carcinogen	IRIS	3/14/2011
Cobalt	NA	· NA	NA	NA	NA	NA	NA NA	NA .
Iron	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	B2 / Probable human carcinogen	IRIS	3/14/2011
Manganese	NA	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	3/14/2011
Mercury	NA	NA	NA	NA	NA	C / Possible human carcinogen	IRIS	3/14/2011
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	3/14/2011

Notes:

- 1 USEPA, 2004: Risk Assessment Guidance for Superfund (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005.
- 2 Adjusted cancer slope factor for dermal = Oral cancer slope factor / Oral absorption efficiency for dermal. Definitions:

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

USEPA(1) = U.S. EPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

TABLE 6.2 CANCER TOXICITY DATA -- INHALATION UXO 32 INDIAN HEAD, MARYLAND

Chemical of Potential	Unit	Risk		on Cancer Factor ⁽¹⁾	Weight of Evidence/ Cancer Guideline	Unit Risk : I	nhalation CSF
Concern	Value	Units	Value	Units	Description	Source(s)	Date(s) (MM/DD/YYYY)
Dioxins/Furans							
2,3,7,8-TCDD Equivalents	3.80E+01	(ug/m ³) ⁻¹	1.3E+05	(mg/kg/day) ⁻¹	B2 / Probable human carcinogen	Cal EPA	9/2009
PCBs							
Aroclor-1260	5.7E-04	(ug/m³) ⁻¹	2.0E+00	(mg/kg/day) 1	B2 / Probable human carcinogen	USEPA(1)	9/1996
Semivolatile Organic Compound	s					· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·
Benzo(a)pyrene Equivalents	1.1E-03	(ug/m ³) ⁻¹	3.9E+00	(mg/kg/day) ⁻¹	NA	Cal EPA	9/2009
Inorganics							· · · · · · · · · · · · · · · · · · ·
Aluminum	NA	NA	NA	NA	NA	NA	NA
Arsenic	4.3E-03	(ug/m ³) ⁻¹	1.5E+01	(mg/kg/day) ⁻¹	A / Known human carcinogen	IRIS	3/14/2011
Cadmium	1.8E-03	(ug/m ³) ⁻¹	6.3E+00	(mg/kg/day) ⁻¹	B1 / Probable human carcinogen	IRIS	3/14/2011
Cobalt	9.0E-03	(ug/m ³) ⁻¹	3.2E+01	(mg/kg/day) ⁻¹	NA	PPRTV	8/25/2008
Iron	NA	NA	NA	NA	NA	NA	- NA
Lead	NA	NA	NA	NA	B2 / Probable human carcinogen	IRIS	3/14/2011
Manganese	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	IRIS	3/14/2011
Mercury	NA	NA	NA	NA	C / Possible human carcinogen	IRIS	3/14/2011
Vanadium	NA	NA	NA	NA	NA NA	NA	NA
Zinc	NA	NA	NA	NA	D / Not classifiable as to human carcinogenicity	NA	NA

Notes:

1 - Inhalation CSF = Unit Risk *-70 kg / 20m3/day.

Definitions:

IRIS = Integrated Risk Information System.

NA = Not Available.

Cal EPA = California Environmental Protection Agency, Technical Support Document for Describing Available Cancer Slope Factors, September 2009.

PPRTV = Provisional Peer Reviewed Toxicity Value.

USEPA(1) = U.S. EPA, PCBs: Cancer Dose-Response Assessment and Applications to Environmental Mixtures, September 1996, EPA/600/P-96/001F.

RAGS Part D Table 7

Calculation of Cancer Risks and Non-Cancer Hazards

LIST OF TABLES RAGS PART D TABLE 7 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

	REASONABLE MAXIMUM EXPOSORES
	Without Chemicals Less Than Background
7.1.RME	Construction Workers
7.2.RME	Industrial Workers
7.3.RME	Child Recreational Users
7.4.RME	Adult Recreational Users
7.5.RME	Child Residents

7.6.RME Adult Residents
Including Chemicals Less Than Background
7.7.RME Construction Workers
7.8.RME Industrial Workers
7.9.RME Child Recreational Users
7.10.RME Adult Recreational Users

Table No.

7.11.RME Child Residents7.12.RME Adult Residents

TABLE 7.1 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Current/Future Receptor Population: Construction Worker Receptor Age: Adult

	Exposure Medium	Exposure Point	Exposure Route	Chemical of		EPC		Ca	ncer Risk Calcu	ations		7				
				Potential Concern	Value	Units	Inlake/Exposu	re Concentration		Unit Risk	T	1		ancer Hazard		
							Value	Units	Value	Units	Cancer Risk		ure Concentration		IID/RfC	Hazard Quotion
urface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	5.3E-06	(mg/kg/day)	1.5E+00			Value	Units	Value	Units	
				Cadmium	1.80	mg/kg	8.3E-08	(mg/kg/day) (mg/kg/day)		(mg/kg/day)"	7.9E-06	3.7E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.2
	1			Lead .	65.1	mg/kg	3.0E-06	1	NA NA	(mg/kg/day) ⁻¹		5.8E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.01
				Benzo(a)pyrene Equivalents	0.350	mg/kg	1.6E-08	(mg/kg/day)	NA .	(mg/kg/day)		2.1E-04	(mg/kg/day)	NA	(mg/kg/day)	
	Í			Aroclor-1260	0.250		II .	(mg/kg/day)	7.3E+00	(mg/kg/day) 1	1.2E-07	1.1E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total		1. 0.230	mg/kg	1.2E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)	2.3E-08	8.1E-07	(mg/kg/day)	NA	(mg/kg/day)	
	}		Dermai	Arsenic	114						8.0E-06					1.2
		•	1	Cadmium	1	mg/kg	4.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	7.1E-07	3 3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
		}		Lead	1.80	mg/kg	2 5E-10	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.7E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0007
				Benzo(a)pyrene Equivalents	65.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)		0.0E+G0	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	0.350	mg/kg	6.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	4.6E-08	4.4E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	A10010F-1260	0.250	mg/kg	4.8E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)	9.7E-09	3.4E-07	(mg/kg/day)	NA.	(mg/kg/day)	
		Exposure Point Total	Exp. House Total	l							7.7E-C7		·	·	1 3 3 3 77	0.1
	Exposure Medium Total	Exposure Form Total									8.8E-C6					1.3
	Air	UXO 32	Inhalation	i							8.8E-C6					1.3
		0,0 32	1	Arsenic	8.0E-5	mg/m³	2.6E-07	(mg/m³)	4.3E-03	(ug/m³):1	1.1E-06	1.8E-05	(mg/m³)	1.5E-05	(mg/m³)	1.2
				Cadmium	1.3E-6	mg/m ^a	4.1E-09	(mg/m³)	1.8E-03	(ug/m³)·1	7.4E-09	2.9E-07	(mg/m ³)	1.0E-05	(mg/m²)	0.03
				Lead	4.6E-5	mg/m³	1.5E-07	(mg/m³)	NA	(ug/m ³) ⁻¹		1.0E-05	(mg/m ³)	NA NA	1	
			1 1	Benzo(a)pyrene Equivalents	2.4E-7	mg/m³	8.0E-10	(mg/m ³)	1.1E-03	(ug/m ³) ⁻¹	8.8E-10	5.6E-08	(mg/m ³)	NA NA	(mg/rn ³)	
				Aroclor-1260	1.7E-7	mg/m³	5.7E-10	(mg/m³)	5.7E-04	(ug/m ³)-1	3.3E-10	4.0E-08	(mg/m³)	NA NA	(mg/m³)	
			Exp. Route Total								1.1E-06	1.02 00	(mg/m)	NA	(mg/m³)	
		Exposure Point Total														1.2
										l l	1.1E-03 i	1				
Marie T. T.	Exposure Medium Total										1.1E-05					1.2
Medium Total									7		1.1E-05					1.2
Medium Total urface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	4.1E-12	(mg/kg/day)	1.3E+05	Imalkaldau):1	1.1E-05 9.9E-06	20510				1.2
		UXO 32	1	2,3,7,8-TCDD Equivalents Arsenic	8.9E-5 68.1	mg/kg mg/kg	4.1E-12 3.1E-06	(mg/kg/day)	1.3E+05 1.5E+00	(mg/kg/day) ⁻¹	1.1E-05 9.9E-06 5.3E-07	2.9E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	1.2 2.6 0.3
		UXO 32			!			(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.1E-03 9.9E-05 5.3E-07 4.7E-06	2.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.2 2.6 0.3 0.7
		UXO 32		Arsenic	68.1	mg/kg mg/kg	3.1E-06	(mg/kg/day) (mg/kg/day)	1.5E+00 NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.1E-05 9.9E-05 5.3E-07 4.7E-06	2.2E-04 2.2E-04	(mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03	(mg/kg/day) (mg/kg/day)	1.2 2.6 0.3
		UXO 32		Arsenic Cadmium	68.1 69.0	mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.1E-03 9.9E-05 5.3E-07 4.7E-06	2.2E-04 2.2E-04 5.4E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA	(mg/kg/day)	1.2 2.6 0.3 0.7
		UXO 32		Arsenic Cadmium Lead	68.1 69.0 1.672 3.30	mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.1E-03 9.9E-06 5.3E-07 4.7E-06	2.2E-04 2.2E-04 5.4E-03 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03	(mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 . 0.2
		UXO 32		Arsenic Cadmium Lead Mercury	68.1 69.0 1.672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.1E-03 9.9E-03 5.3E-07 4.7E-06	2.2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02	(mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 . 0.2
		UXO 32		Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30	mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.1E-03 9.9E-06 5.3E-07 4.7E-06 7.4E-07	2.2E-04 2.2E-04 5.4E-03 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2
		UXO 32	Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	68.1 69.0 1.672 3.30 3,500 6.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	1.1E-05 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06	2.2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 . 0.2 0.04
		UXO 32	Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.8-TCDD Equivalents	68.1 69.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.1E-05 9.9E-06 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08	2.2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1,2 2,6 0,3 0,7 0,2 0,04 0,04
		UXO 32	Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	1.1E-05 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06	2.2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2 0.04 0.04
		UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.1E-05 9.9E-06 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08	2.2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2 0.04 0.04 1.3
		UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium	68.1 69.0 1.672 3.30 3.500 6.00 8 9E-5 68.1 69.0 1.672	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	1.1E-05 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2 0.04 0.04 1.3 0.03
		UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury	68.1 69.0 1.672 3.30 3.500 6.00 8.9E-5 68.1 69.0 1.672 3.30	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3 1E-06 3 2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2 3E-07 9 5E-09 0.0E+00 4.6E-10	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	1.1E-05 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-11 2.0E-05 6.7E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.04 0.04 1.3 0.03 0.07
		UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30 3.500 6.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00 4.6E-10 4.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-03 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-11 2.0E-05 6.7E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 . 0.2 0.04 0.04 1.3 0.03 0.07 0.03
			Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury	68.1 69.0 1.672 3.30 3.500 6.00 8.9E-5 68.1 69.0 1.672 3.30	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3 1E-06 3 2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2 3E-07 9 5E-09 0.0E+00 4.6E-10	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-03 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-05 2.6E-05 0.0E+00 3.2E-08	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 . 0.2 0.04 0.04 1.3 0.03 0.07
			Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30 3.500 6.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00 4.6E-10 4.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-03 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-05 2.6E-11 2.0E-05 6.7E-07 0.0E+00 3.2E-08 3.4E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2 0.04 0.04 0.3 0.3 0.07 0.03 0.07
	Surface Soil (under cap)		Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30 3.500 6.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00 4.6E-10 4.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-03 9 9E-05 5 3E-07 4.7E-06 7.4E-07 6 0E-06 4 8E-08 4 2E-07	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-05 2.6E-11 2.0E-05 6.7E-07 0.0E+00 3.2E-08 3.4E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2
		Exposure Point Total	Exp. Route Total Dermal L Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	68.1 69.0 1.672 3.30 3.500 6.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00 4.6E-10 4.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-05 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07 3.1E-07 7.8E-07	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-05 2.6E-11 2.0E-05 6.7E-07 0.0E+00 3.2E-08 3.4E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2
	Surface Soil (under cap)		Exp. Route Total Dermal L Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30 3.500 6.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00 4.6E-10 4.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-05 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07 3.1E-07 7.8E-07 6.8E-06	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-11 2.0E-05 6.7E-07 0.0E+00 3.2E-08 3.4E-05 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 . 0.2 0.04 0.04 1.3 0.03 0.07 0.03 0.002 0.0001
	Surface Soil (under cap)	Exposure Point Total	Exp. Route Total Dermal Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.6-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00 4.6E-10 4.8E-07 1.5E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-03 9 9E-05 5 3E-07 4.7E-06 7.4E-07 6.0E-06 4 8E-08 4 2E-07 3.1E-07 7.8E-07 6.8E-06 6.8E-06 7.7E-09	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-05 6.7E-07 0.0E+00 3.2E-08 3.4E-05 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2 0.04 0.04 1.3 0.03 0.07 0.03 0.002 0.0001
	Surface Soil (under cap)	Exposure Point Total	Exp. Route Total Dermal Exp. Route Total Inhalation 2	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	3.1E-06 3.2E-06 7.7E-05 1.5E-07 1.6E-04 3.7E-07 3.7E-13 2.8E-07 9.5E-09 0.0E+00 4.6E-10 4.8E-07 1.5E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.1E-03 9.9E-05 5.3E-07 4.7E-06 7.4E-07 6.0E-06 4.8E-08 4.2E-07 3.1E-07 7.8E-07 6.8E-06 6.8E-06	2 2E-04 2.2E-04 5.4E-03 1.1E-05 1.1E-02 2.6E-05 2.6E-11 2.0E-05 6.7E-07 0.0E+00 3.2E-08 3.4E-05 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.2 2.6 0.3 0.7 0.2 0.04 0.04 1.3 0.03 0.07 0.03 0.002 0.0001

TABLE 7.1.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Current/Future Receptor Population: Construction Worker Receptor Age: Adult

Exposure Medium Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium Air Exposure Medium Medium Total Ubsurface Soil Subsurface Soil		Exposure Point	Exposure Route	Chemical of		EPC	1	Ca	ncer Risk Calcul	ations		T				
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium Medium Total	1			Potential Concern	Value	Units	Intake/Expos	ure Concentration		/Unit Risk	T	less to 15		ancer Hazard (
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium Medium Total		1		1			Value	Units	Value		Cancer Risk		ure Concentration	 	ID/RIC	Hazard Quotie
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium Medium Total				Mercury	2.3E-6	mg/m³	7.5E-09			Units		Value	Units	Value	Units	
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium				Zinc	0.002			(mg/m³)	NA.	(ug/m³) ⁻¹		5.3E-07	(mg/m³)	3.0E-05	(mg/m ³)	0.02
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium	1	i		Aroclor-1260	1	mg/m²	8.0E-06	(mg/m³)	ŅA	(ug/m³) ⁻¹		5.6E-04	(mg/m³)	NA	(mg/m³)	
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium			Exp. Route Total		5.6E-6	mg/m ³	1.8E-08	(mg/m ³)	5.7E-04	(ug/m ³) ⁻¹	1.0E-08	1.3E-06	(mg/m ³)	NA	(mg/m³)	
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium	F	Exposure Point Total	Exp. Houle Total	J			L				9.7E-07				1	1.8
Medium Total Surface Soil (future) Exposure Medium Air Exposure Medium Medium Total		Exposure Point Total									9.7E-07					1.8
Exposure Medium Medium Total	viedium Fotal										9.7E-07					
Exposure Medium Air Exposure Medium Madium Total											7.7E-06					18
Air Exposure Medium Medium Total	f (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	4.1E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ¹	5.3E-07	2.9E-10	1			3.3
Air Exposure Medium Medium Total				Arsenic	143	mg/kg	6.6E-06	(mg/kg/day)	1.5E+00		Į	II .	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.3
Air Exposure Medium Medium Total				Cadmium	13.1	mg/kg	6.0E-07			(mg/kg/day)	9.9E-06	4 6E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.5
Air Exposure Medium Medium Total				Lead	503		li .	(mg/kg/day)	NA	(mg/kg/day)		4.2E-05	. (mg/kg/day)	1.0E-03	(mg/kg/day)	0.04
Air Exposure Medium Medium Total				Mercury		mg/kg	2.3E-05	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		1.6E-03	(mg/kg/day)	NA	(mg/kg/day)	-
Air Exposure Medium Medium Total	ĺ			1	3.30	mg/kg	1.5E-07	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		1.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
Air Exposure Medium Medium Total			1	Zinc	3,500	mg/kg	1.6E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.1E-02	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.04
Air Exposure Medium Medium Total	ļ		1	Benzo(a)pyrene Equivalents	0.360	mg/kg	1.7E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.2E-07	1.2E-06	(mg/kg/day)	NA.	(mg/kg/day)	
Air Exposure Medium Medium Total	Ī	ĺ		Aroclor-1260	4.40	mg/kg	2.0E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	4.1E-07	1.4E-05	(mg/kg/day)	NA	(mg/kg/day)	
Air Exposure Medium Medium Total			Exp. Route Total							1, 5 5 77	1.1E-05		(mg/kg/day)		(mg/kg/day)	
Air Exposure Medium Medium Total	1	1	Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	3.7E-13	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	4.8E-08	2.6E-11	T			1.9
Air Exposure Medium Medium Total	1	1		Arsenic	143	mg/kg	5.9E-07	(mg/kg/day)	1.5E+00	1		1	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.03
Air Exposure Medium Medium Total	1.		1	Cadmium	13.1	mg/kg	1.8E-09			(mg/kg/day) ⁻¹	8.9E-07	4.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.14
Air Exposure Medium Medium Total	1	[Lead	503			(mg/kg/day)	NA	(mg/kg/day)		1.3E-07	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.01
Air Exposure Medium Medium Total	ì	ĺ				mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
Air Exposure Medium Medium Total		1		Mercury	3.30	mg/kg	4.6E-10	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		3.2E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.002
Air Exposure Medium Medium Total		1	1	Zinc	3,500	mg/kg	4.8E-07	(mg/kg/day)	NA	(mg/kg/day)."		3.4E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.0001
Air Exposure Medium Medium Total		1		Benzo(a)pyrene Equivalents	0.360	mg/kg	6.5E-09	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	4.7E-08	4.5E-07	(mg/kg/day)	NA	{	1
Air Exposure Medium Medium Total	İ	İ		Aroclor-1260	4.40	mg/kg	8.5E-06	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.7E-07	6.0E-06			(mg/kg/day)	
Air Exposure Medium Medium Total	L		Exp. Route Total							(mg/kg/ddy)	1.2E-06	0.02-00	(mg/kg/day)	NA	(mg/kg/day)	
Air Exposure Medium Medium Total		Exposure Point Total		<u> </u>		-					1.2E-05					0.2
Medium Total	/ledium Total															2.1
Medium Total		UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	6.2E-11	mg/m³	2.0E-13	(T	1.2E-05					2.1
Medium Total		i .	l	Arsenic	1.0E-4			(mg/m ³)	3.8E+01	(ug/m³)·¹	7.7E-09	1.4E-11	(mg/m³)	4.0€-08	(mg/m ³)	0.0004
Medium Total		i '	i	Cadmium		mg/m³	3.3E-07	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	1.4E-06	2.3E-05	(mg/m³)	1.5E-05	(mg/m³)	1.5
Medium Total		i '		1	9.2E-6	mg/m ³	3.0E-08	(mg/m³)	1.8E-03	(ug/m ³) ⁻¹	5 4E-08	2.1E-06	(mg/m³)	1.0E-05	(mg/m³)	0.2
Medium Total		i '		Lead	3.5E-4	mg/m³	1.1E-06	(mg/m³)	NA	(ug/m³)··		8.0E-05	(mg/m³)	NA	(rng/m³)	
Medium Total		i l		Mercury	2.3E-6	mg/m³	7 5E-09	(mg/m³)	NA	(ug/m ³) ⁻¹		5.3E-07	(mg/m³)	3.0E-05	(mg/m³)	0 02
Medium Total		,		Zinc	0.002	mg/m ³	8.0E-06	(mg/m³)	NA	(ug/m ³) ⁻¹		5.6E-04	(mg/m³)	NA	1	
Medium Total		,		Benzo(a)pyrene Equivalents	2.5E-7	mg/m³	8.2E-10	(mg/m³)	1.1E-03	(ug/m³)-1	9.0E-10	5.7E-08	(mg/m³)	NA	(mg/m³)	
Medium Total				Aroclor-1260	3.1E-6	mg/m³	1.0E-08	(mg/m³)	5.7E-04	(ug/m³)-1	5.7E-09	7.0E-07	1 ' ' '		(mg/m³)	,,
Medium Total	L		Exp. Route Total		'	<u> </u>		(g /		(ug/iii)		7.06-07	(mg/m³)	NA	(mg/m³)	
Medium Total		Exposure Point Total		· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·					1.5E-06					1.7
	ledium Total										1.5E-06					1.7
osurface Soil Subsurface Soil	~										1.5E-06					1.7
2232.300 001	Soil	UXO 32	Ingestice		,			T:			1.4E-05					3.9
		0.00 32	Ingestion		ł											
	1		[Arsenic	110	mg/kg	5.1E-06	(mg/kg/day)	1.5E+00	(mg/kg/day):1	7.6E-06	3.6E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.2
	-			Benzo(a)pyrene Equivalents	0.480	mg/kg	2.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.6Ë-07	1.5E-06	(mg/kg/day)	NA NA		
ŀ		l	Exp. Route Total							,	7.8E-06		(mg/kg/day)	NA.	(mg/kg/day)	
		V				7 				r — — ļ	7.00-00					1.2
		i	Dermal	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	1											

TABLE 7.1.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

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Scenario Timeframe: Current/Future Receptor Population: Construction Worker Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	- · · · · · · · · · · · · · · · · · · ·	E	PC		Can	icer Risk Calcula	tions			Non Co	ncer Hazard C	-11-1	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	C\$F/L	Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration		D/RIC	Hazard Quotie
	_						Value	Units	Value	Units		Value	Units	Value	Units	- Fazaro Guollei
				Benzo(a)pyrene Equivalents	0.480	mg/kg	8.6E-09	(mg/kg/day)	7.3E+00	(mg/kg/day) 1	6.3E-08	6.0E-07	(mg/kg/day)			-
			Exp. Route Total				1			[(g. ng. au))	7.5E-07	0.00.07	(Hig/kg/day)	NA	(mg/kg/day)	<u> </u>
		Exposure Point Total									8.5E-06					0.1
	Exposure Medium Total						ļ	· · · · · · · · · · · · · · · · · · ·								13
	Air	UXO 32	Inhalation			1		T			8.5E-06		,			1.3
			1	Arsenic	7.7 E -5	mg/m³	2.5E-07	(mg/m³)	4.3E-03	(ug/m³):1	1.1E-06	1.8E-05	(mg/m³)	1.5E-05	(mg/m³)	1.2
			Exp. Route Total	Benzo(a)pyrene Equivalents	3.4E-7	mg/m ³	1.1E-09	(mg/m³)	1.1E-03	(ug/m³) ⁻¹	1.2E-09	7.7E-08	(mg/m ³)	NA	(mg/m ³)	1.4
	-	Exposure Point Total	Exp. Houte Total	L					, <u>.</u>		1.1E-06					1 2
	Exposure Medium Total	Expedition of the Total		· · · · · · · · · · · · · · · · · · ·							1.1E-06					1.2
Medium Total											1.1E-06					1.2
							L				9.6E-06			· · · · · · · · · · · · · · · · · · ·		2.5

TABLE 7.2 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timelrame: CurrenVFuture Receptor Population: Industrial Worker Receptor Age: Adult

	Exposure Medium	Exposure Point	Exposure Route		1 1	EPC			Base Diet O. 1							
				Potential Concern	Value	Units	Intake/Evpos	ure Concentration	ncer Risk Calcu	/Unit Risk				ancer Hazard		
		<u>L</u> .			1		Value				Cancer Risk		ure Concentration	, F	RID/RIC	Hazard Quotie
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	4.0E-05	Units	Value	Units		Value	Units	Value	Units	7
				Cadmium	1.80	mg/kg	6.3E-07	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	6.0E-05	1 *E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Lead	65.1	1	4	(mg/kg/day)	NA	(mg/kg/day)		1.8E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0 002
		i		Benzo(a)pyrene Equivalents	0.350	mg/kg	2.3E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.4E-05	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	0.350	mg/kg	1.26-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	8.9E-07	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	1	0.250	mg/kg	8.7E-08	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.7E-07	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Dermal	Arsenic	T		ļ				6.1E-05					0.4
				Cadmium	114	mg/kg	7.9E-06	(mg/kg/day)	1 5E+00	(mg/kg/day):1	1.2E-05	2 2E-05	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.07
				į.	1.80	mg/kg	4.2E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.2E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0005
				Lead	65.1	mg/kg	0.DE+00	(mg/kg/day)	NA	(mg/kg/day):1		0.0E+00	(mg/kg/day)	NA NA	(mg/kg/day)	0.0003
				Benzo(a)pyrene Equivalents	0.350	mg/kg	1.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	7.7E-07	2.9E-07	(mg/kg/day)	NA.	(mg/kg/day)	
			-	Aroclor-1260	0.250	mg/kg	8.1E-08	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.6E-07	2.3E-07	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Route Total						· · · · · · · · · · · · · · · · · · ·		1.3E-05		(Highlightay)	.,,,,	(ing/kg/day)	
		Exposure Point Total									7.4E-05					0.07
	Exposure Madium Total										7.4E-05					0.4
	Air	UXO 32	Inhalation	Arsenic	3.5E-8	mg/m³	2.9E-09	(mg/m³)	4 3E-03	(ug/m ³) '	1.2E-08	8.1E-09			7	0.4
				Cadmium	5.6E-10	mg/m³	4.5E-11	(mg/m ³)	1.8E-03	(ug/m ³)-1	8.2E-11	1	(mg/m³)	1.5E-05	(mg/m³)	0.0005
			1	Lead	2.0E-8	mg/m ³	1.6E-09	(mg/m ³)	NA NA	1 1	i i	1.3E-10	(mg/m³)	1.0E-05	(mg/m³)	0.00001
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m³	8.8E-12	(mg/m³)	1.1E-03	(ug/m³) ⁻¹		4.6E-09	(mg/m ³)	NA	(mg/m³)	
				Aroclor-1260	7.7E-11	mg/m ³	6.3E-12	(mg/m³)	5.7E-04	(ug/m³) ⁻¹	9.7E-12	2.5E-11	(mg/m³)	NΑ	(mg/m ³)	
			Exp. Route Total			- Ingili	0.02-12	(mg/m)	5.7E-04	(ug/m³) 1	3.6E-12	1.8E-11	(mg/m³)	NA	(mg/m³)	L
		Exposure Point Total									1.2E-08					0.0005
	Exposure Medium Total										1.2E-08					0.0005
14 1: *										II.	1.2E-08					
Medium Total											1.25-08					0 0005
	Surface Soil (under cap)	. UXO 32	Ingestion	2 2 7 8 TCDD Faviral	7						7.4E-05					
	Surface Soil (under cap)	. UXO 32	1	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	3.1E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹		8.7E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.4
	Surface Soil (under cap)	· UXO 32		Arsenic	68.1	mg/kg	2.4E-05	(mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05	8.7E-11 6.7E-05	(mg/kg/day) (mg/kg/day)	1.0E-09 3.0E-04	(mg/kg/day)	0.4
	Surface Soil (under cap)	· UXO 32		Arsenic Cadmium	68.1 69.0	mg/kg mg/kg	2.4E-05 2.4E-05			1	7.4E-05 4.0E-06			3.0E-04	(mg/kg/day)	0.4 0.09 0.2
	Surface Soil (under cap)	· UXO 32		Arsenic Cadmium Lead	68.1 69.0 1,672	mg/kg	2.4E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	7.4E-05 4.0E-06 3.6E-05	6.7E-05	(mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03	(mg/kg/day) (mg/kg/day)	0.4
	Surface Soil (under cap)	· UXO 32		Arsenic Cadmium Lead Mercury	68.1 69.0 1,672 3.30	mg/kg mg/kg	2.4E-05 2.4E-05	(mg/kg/day) (mg/kg/day)	1.5E+00 NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05 4.0E-06 3.6E-05	6.7E-05 6.8E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1
	Surface Soil (under cap)	· UXO 32		Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1,672	mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05 4.0E-06 3.6E-05	6.7E-05 6.8E-05 1.6E-03 3.2E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1
	Surface Soil (under cap)	· UXO 32		Arsenic Cadmium Lead Mercury	68.1 69.0 1,672 3.30	mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05 4.0E-06 3.6E-05 	6.7E-05 6 8E-05 1.6E-03 3.2E-06 3.4E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1
	Surface Soil (under cap)	· UXO 32	Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1,672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05 4.0E-06 3.6E-05 5.6E-06	6.7E-05 6.8E-05 1.6E-03 3.2E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01
	Surface Soil (under cap)	· UXO 32	Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1,672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05	6.7E-05 6.8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.91
	Surface Soil (under cap)	· UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	68.1 69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07	6.7E-05 6.8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4
	Surface Soil (under cap)	· UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7.8-TCDD Equivalents	68.1 69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2 4E-05 5.8E-04 1.2E-06 1 2E-03 2.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 3E+05 1 3E+05	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6.7E-05 6.8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01
	Surface Soil (under cap)	· UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroctor-1260 2.3.7.8-TCDD Equivalents Arsenic	68.1 69.0 1,672 3.30 3,500 8.00 8.9E-5 68.1	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6.7E-05 6.8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4
	Surface Soil (under cap)	· UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7,8-TCDD Equivalents Arsenic Cadmium	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.8E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.5E+00 NA NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6.7E-05 6.8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02
	Surface Soil (under cap)	· UXO 32	Exp. Route Total Oermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7,8-TCDD Equivalents Arsenic Cadmium	68.1 69.0 1,672 3.30 3,500 8.00 8.9E-5 68.1 69.0 1,672 3.30	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6 7E-05 6 8E-05 1.6E-03 3 2E-06 3 4E-03 7 8E-05 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02
	Surface Soil (under cap)	UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroctor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.6E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6.7E-05 6.8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02 0.04
	Surface Soil (under cap)	UXO 32	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury	68.1 69.0 1,672 3.30 3,500 8.00 8.9E-5 68.1 69.0 1,672 3.30	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6 7E-05 6 8E-05 1.6E-03 3 2E-06 3 4E-03 7 8E-05 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.2 0.4 0.02 0.04
	Surface Soil (under cap)	UXO 32 Exposure Point Total	Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroctor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.6E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6 7E-05 6 8E-05 1.6E-03 3.2E-06 3.4E-03 7 8E-05 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008
			Exp. Route Total Dermal	Arsenic Cadmium Lead Mercury Zinc Aroctor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.6E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06	6 7E-05 6 8E-05 1.6E-03 3.2E-06 3.4E-03 7 8E-05 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008
	Surface Soil (under cap) Exposure Medium Total	Exposure Point Total	Exp. Route Total Dermal Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroctor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroctor-1260	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.8E-07 0.0E+00 7.6E-09 8.1E-06 2.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06 5.2E-06	6 7E-05 6 8E-05 1.6E-03 3.2E-06 3.4E-03 7 8E-05 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008
wedum (olal urface Soil (under cap)			Exp. Route Total Dermal Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1280 2.3.7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1280	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.6E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06 5.2E-06 1.3E-05 5.8E-05	6 7E-05 6 8E-05 1.6E-03 3.2E-06 3.4E-03 7 8E-05 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008 0.08
		Exposure Point Total	Exp. Route Total Dermal Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3.7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.8E-07 0.0E+00 7.6E-09 8.1E-06 2.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1.5E+00 NA NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06 5.2E-06 1.3E-05 5.8E-05 5.8E-05	6 7E-05 6 8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05 7.2E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008 0.5 0.08 0.5
		Exposure Point Total	Exp. Route Total Dermal Exp. Route Total	Arsenic Cadmium Lead Mercury Zinc Aroclor-1280 2.3.7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1280	68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	2.4E-05 2.4E-05 5.8E-04 1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06 2.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 5E+00 NA NA NA NA 2 0E+00 1 3E+05 1 5E+00 NA NA NA NA 2.0E+00	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	7.4E-05 4.0E-06 3.6E-05 5.6E-06 4.5E-05 8.0E-07 7.1E-06 5.2E-06 1.3E-05 5.8E-05 5.8E-05 5.8E-05 8.5E-11	6.7E-05 6.8E-05 1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05 7.2E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.4 0.09 0.2 0.1 0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008 0.08

TABLE 7.2.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of		EPC		Car	cer Risk Calcul	ations			Non-Ca	ncer Hazard C	Calculations	
			Ì	, Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/	Unit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RIC	Hazard Quotie
					<u> </u>]	Value	Units	Value	Units	1 .	Value	Units	Value	Units	7 1022113 330111
				Mercury	1.0E-9	mg/m³	6.3E-11	(mg/m³)	NA	(ug/m³) ⁻¹		2.3E-10	(mg/mi ³)	3.0E-05	(mg/m³)	0.000008
				Zinc	1.1E-6	mg/m³	8.8E-08	(mg/m³)	NA	(ug/m ³) ⁻¹		2.5E-07	(mg/m ³)	NA	(mg/m³)	
				Aroclor-1260	2.5E-9	mg/m³	2.0E-10	(mg/m ³)	5.7E-04	(ug/m³)' 1	1.2E-10	5.7E-10	(mg/m ³)	NA	(mg/m³)	
			Exp. Route Total			.1	ļ · · · · · · · · · · · · · · · · · · ·	1	-	1 1-37	1.1E-08	1	(mg/iii)		(mg/m)	0.0008
		Exposure Point Total					1				1.1E-08					0.0008
	Exposure Medium Total										1 1E-08					0.0008
Medium Total					**		 				5.8E-05		· · · · · · · · · · · · · · · · · · ·			
urface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2.3,7.8-TCDD Equivalents	8.9E-5	mg/kg	3.1E-11	(mg/kg/day)	1.3E+05	(mg/kg/day)	4.0E-06	8.7E-11	(mg/kg/day)	1.0E-09	1 7	0.5
				Arsenic	143	mg/kg	5.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	7.5E-05	1.4E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
				Cadmium	13.1	mg/kg	4.6E-06	(mg/kg/day)	NA NA		1	II	1		(mg/kg/day)	0.5
				Lead	503	mg/kg.	1.8E-04	i	NA.	(mg/kg/day)		1.3E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.01
				Mercury	3.30	mg/kg	1.2E-06	(mg/kg/day)		(mg/kg/day) 1		4.9E-04	(mg/kg/day)	NA -	(mg/kg/day)	
	1			Zinc	1	1	l,	(mg/kg/day)	NA	(mg/kg/day)		3.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
					3,500	mg/kg	1.2E-03	(mg/kg/day)	NA	(mg/kg/day)		3.4E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.01
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1 3E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	9.2E-07	3.5E-07	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	1.5E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	3.1E-06	4.3E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	 			ļ	,			8.3E-05					0.6
		Ì	Dermal	2.3,7.8-TCDD Equivalents	8.9E-5	mg/kg	6.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	8.0E-07	1.7E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
			ļ	Arsenic	143	mg/kg	9.9E-06	(mg/kg/day)	:.5E+00	(mg/kg/day) ⁻¹	1.5E-05	2.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.09
	}		1	Cadmium	13.1	mg/kg	3.0E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		8.5E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.00
				Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	7.6E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.1E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0 001
				Zinc	3,500	mg/kg	B.1E-06	(mg/kg/day)	NA	(mg/kg/day)		2.3E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.00008
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1.1E-07	(mg/kg/day)	7 3E+00	(mg/kg/day) ⁻¹	7.9E-07	3.0E-07	(mg/kg/day)	NA	(mg/kg/day)	
				Arodlor-1260	4.40	mg/kg	1.4E-06	(mg/kg/day)	2 0E+00	(mg/kg/day)	2.8E-06	4.0E-06	(mg/kg/day)	NA	(mg/kg/day)	
]	Exp. Route Total	1						1 (33))	1.9E-05		(119119121)		(mg/ng/du))	0.11
		Exposure Point Total					· · · · · · · · · · · · · · · · · · ·				1.0E-04					0.7
	Exposure Medium Total			······································			† 				1.0E-04			·		0.7
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	2.8E-14	mg/m³	2.2E-15	(mg/m ³)	3.8E+01	(ug/m ³) ⁻¹	8.5E-11	6.3E-15	(mg/m ³)	4.0E-08	7 3.	0.0000002
			ļ	Arsenic	4.4E-8	mg/m ³	3.6E-09	(mg/m³)	4.3E-03	(ug/m³):1	1.6E-08	1.0E-08		1.5E-05	(mg/m ³)	1
				Cadmium	4.16-9	mg/m²	3 3E-10	(mg/m³)	1.8E-03	(ug/m³) ⁻¹	6.0E-10	Į.	(mg/m ³)		(mg/m ³)	0.0007
				Lead	1.6E-7	mg/m ³	1.3E-08			1		9.3E-10	(mg/m³)	1.0E-05	(mg/m³)	0.00009
				Mercury	1.0E-9		8.3E-11	(mg/m ³)	NA NA	(ug/m³) '	**	3.6E-08	(mg/m³)	NA -	(mg/m³)	-
				1 '		mg/m³	1	(mg/m³)	NA	(ug/m³) ⁻¹		2.3E-10	(mg/m³)	3.0E-05	(mg/m³)	0 000008
				Zinc	1 1E-6	mg/m ³	8.8E-08	(mg/m³)	NA	(ug/m ³)-1		2 5E-07	(mg/m³)	NΑ	(mg/m³)	
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m ³	9.1E-12	(mg/m³)	1.1E-03	(ug/m ³) ⁻¹	1.0E-11	2.5E-11	(mg/m ³)	NΑ	(mg/m³)	
				Aroclor-1260	1.4E-9	mg/m ³	1.1E-10	(mg/m³)	5.7E-04	(ug/m ³)-1	6.3E-11	3.1E-10	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total						<u></u>		1.6E-08			_		0.0008
		Exposure Point Total			···.		L				1.6E-08					0.0008
	Exposure Medium Total		dealed the control								1.6E-08					0.0008
Medium Total											1.0E-04				***************************************	0.7
ubsurface Soil	Subsurface Soil	UXO 32	Ingestion												<u> </u>	
				Arsenic -	110	mg/kg	3.8E-05	(mg/kg/day)	1.5E+00	(mg/kg/day):1	5.8E-05	1.1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
			L	Benzo(a)pyrene Equivalents	0.480	mg/kg	1.7E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	1.2E-06	4.7E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total				·			1	5.9E-05		1		1 (gg. ody)	0.4
	1		Dermal			T	ļ- -	1							Γ	L

TABLE 7.2 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC	<u> </u>	Con	icer Risk Calcula							·
	1			Polential Concern	Value	Units	Intoles/Comme	e Concentration					Non-Ca	ncer Hazard C	alculations	
						Ollins				Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration		D/RIC	Hazard Quotie
				Benzo(a)pyrene Equivalents			Value	Units	Value	Units		Value	Units	Value	Units	- razard Guotie
-	1		Exp. Route Total		0 480	mg/kg	1.4E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.1E-06	4.0E-07	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total	Exp. Flodie Total		· · · · · · · · · · · · · · · · · · ·						1.2E-05		1 1 3 3 4 4 7 1		(mg/xg/day)	0.07
	Exposure Medium Total						-				7.1E-05					
i	Air	UXO 32	Inhalation								7.1E-05					0.4
				Arsenic Benzo(a)pyrene Equivalents	3.4E-8 1.5E-10	mg/m³ mg/m³	2.8E-09 1.2E-11	(mg/m²) (mg/m³)	4.3E-03 1.1E-03	(ug/m³) ⁻¹	1.2E-08 1.3E-11	7.8E-09 3.4E-11	(mg/m³) (mg/m³)	1.5E-05 NA	(mg/m³) (mg/m³)	0.0005
		Exposure Point Total	J. Empt Hoole Fortal								1.2E-08				(mg/m)	0.0005
	Exposure Medium Total										1.2E-08				The same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa	0.0005
Medium Total											1.2E-08					0.0005
											7.1E-05					0.0005

TABLE 7.3. RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of		PC		Car	ncer Risk Calcul	ations			Non-Ca	ncer Hazard C	Calculations	
		1		Potential Concern	Value	Units	Intake/Exposu	re Concentration		Unit Risk	Cancer Risk	Intake/Exposi	ure Concentration		ID/RIC	Hazard Quolie
							Value	Units	Value	Units	- Janoor Tillok	Value	Units	Value	Units	Hazard Obolie
Burface Soil (current)	Surface Soil (current)	UXÓ 32	Ingestion	Arsenic	114	mg/kg	1.9E-05	(mg/kg/day)	1.5E+00	(mg/kg/day).1	2.8E-05	2.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
	•			Cadmium	1.80	mg/kg	2.9E-07	(mg/kg/day)	NΑ	(mg/kg/day)		3.4E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.003
				Lead	65.1	mg/kg	1.1E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.2E-04	(mg/kg/day)	NA.	(mg/kg/day)	0.000
				Benzo(a)pyrene Equivalents	0.350	mg/kg	3.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	2.2E-06	6.6E-07	(mg/kg/day)	NA.	(mg/kg/day)	
				Aroclor-1260	0.250	rng/kg	4.1E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)	8.1E-08	4.7E-07	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Route Total								3.0E-05	† 	133//		(Ilig/kg/day)	0.7
			Dermal	Arsenic	114	mg/kg	1.6E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	2.3E-06	1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Cadmium	1.80	mg/kg	8.2E-10	(mg/kg/day)	NA	(mg/kg/day)		9.6E-09	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0004
				Lead	65.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA.	(mg/kg/day)	0.0004
			j	Benzo(a)pyrene Equivalents	0.350	mg/kg	1.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	8.1E-07	2.4E-07	(mg/kg/day)	NA.	(mg/kg/day)	
				Aroclor-1260	0.250	mg/kg	1.6E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)	3.2E-08	1.9E-07	(mg/kg/day)	NA NA	1	"
			Exp. Route Total						· · · ·	(3.2E-06	7.50	(Ingregiday)	INA.	(mg/kg/day)	
		Exposure Point Total				··········					3.3E-05					0.06
	Exposure Medium Total										3.3E-05		 			0.8
	Air	UXO 32	Inhalation	Arsenic	3.5E-8	mg/m³	7.2E-11	(mg/m³)	4.3E-03	(ug/m³)-1	3.1E-10	B.4E-10	731			0.8
				Cadmium	5.6E-10	mg/m³	1.1E-12	(mg/m ³)	1.8E-03	(ug/m³)·1	2.0E-12	1.3E-11	(mg/m ³)	1.5E-05	(mg/m³)	0.00006
				Lead	2.0E-8	mg/m³	4.1E-11	(mg/m ³)	NA	(ug/m³)-1		4.8E-10	(mg/m³)	1.0E-05	(mg/m ³)	0.000001
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m³	1.2E-12	(mg/m³)	1,1E-03	(ug/m ³).1	1.3E-12		(mg/m³)	NA	(mg/m ³)	
				Aroclor-1260	7.7E-11	mg/m³	1.6E-13	(mg/m³)	5.7E-04	(ug/m ³) ⁻¹	9.0E-14	2.6E-12	(mg/m³)	NA	(mg/m ³)	
			Exp. Route Total				-	(mg/m)	3.7 2-04	(ug/m)	3.1E-10	1.8E-12	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total									3.1E-10					0.00006
	Exposure Medium Total		- X										· · · · · · · · · · · · · · · · · · ·			0.00006
Medium Total											3.1E-10 3.3E-05					0.00006
urface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	1.4E-11	(mg/kg/day)	1.3E+05	I described to 15	1.9E-06	. 75			1	0.8
			_	Arsenic	68.1	mg/kg	1.1E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) 1		1.7E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.2
				Cadmium	69.0	mg/kg	1.1E-05	(mg/kg/day)	NA	(mg/kg/day) ¹	1.7E-05	1.3E-04	(mg/kg/day)	- 3.0E-04	(mg/kg/day)	0.4
				Lead	1,672	mg/kg	2.7E-04	(mg/kg/day)	NA NA	(mg/kg/day) ⁻¹		1.3E-04	(mg/kg/day)	1.0E-03	(mg/kg/day)	0,1
				Mercury	3.30	mg/kg	5.4E-07	(mg/kg/day)	NA NA	(mg/kg/day) ¹	•-	3.2E-03	(mg/kg/day)	NA	(mg/kg/day)	
				Zinc	3,500	mg/kg	5.7E-04	1 1		(mg/kg/day)	* -	6.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Aroclor-1260	8.00	mg/kg	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)'		6.6E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.02
			Exp. Route Total	11000	0.00	I mg/kg	1.32-06	(mg/kg/day)	2.0E+00	(mg/kg/day) 1	2.6E-06	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	
				2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	1.2E-12	[(m=0)=(1)=) [4.05.00	,	2.1E-05		· · · · · · · · · · · · · · · · · · ·			0.8
			1	Arsenic	68.1	mg/kg	9.3E-07	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.6E-07	1.4E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
				Cadmium	69.0			(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.4E-06	1.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Lead	1,672	mg/kg	3.1E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		3.7E-07	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.01
	ŀ		1	Mercury		mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)"		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Zinc	3.30 3.500	mg/kg	1.5E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.8E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0008
						mg/kg	1.6E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.9E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0 00006
			Exp. Roule Total	Aroclor-1260	8.00	mg/kg	5.1E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.0E-06	6.0E-06	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total	exp. moute Total								2.6E-06					0.07
	Exposure Medium Total	Exposure Point Total		** ***********************************							2.4E-05					0.8
	Exposure Medium Total	100.00									2.4E-05					0.8
	Air I	UXO 32	1	2,3,7,8-TCDD Equivalents	2.8E-14	mg/m²	5.6E-17	(mg/m³)	3.8E+01	(ug/m³) ⁻¹	2.1E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
				Arsenic	2.1E-8	mg/m³	4.3E-11	(mg/m³)	4.3E-03	(ug/m³).1	1.8E-10	5.0E-10	1 1	_		
			{ I				4.00.11	(iligziii)	4.02.00	(ug/m)	1.86-10	5.06-10	(mg/m ³)	1.5E-05	(mg/m³)	0.00003
				Cadmium Lead	2.1E-8	mg/m ³	4.3E-11	(mg/m³)	1.8E-03	(ug/m ³) ⁻¹	7.8E-10	5.1E-10	(mg/m²) (mg/m³)	1.5E-05 1.0E-05	(mg/m³) (mg/m³)	0.00003

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

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Scenario Timeframe; Future Receptor Population: Recreational User Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of		EPC	 		cer Risk Calcul	ations	,	L	Non-Ca	ncer Hazard C	alculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF	Unit Risk	Cancer Risk	Intake/Exposu	re Concentration	Rf	D/RfC	Hazard Quotie
							Value	Units	Value	Units		Value	Units	Value	Units	1
				Мегсигу	1.0E-9	mg/m³	2.1E-12	(mg/m³)	NA	(ug/m ³) ⁻¹		2.4E-11	(mg/m³)	3.0E-05	(mg/m³)	0.0000008
	· ·			Zinc	1.1E-6	mg/m ³	2.2E-09	(mg/m³)	NA	(ug/m³) · ·		2.6E-08	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260	2.5E-9	mg/m ³	5.0E-12	(mg/m ³)	5 7E-04	(ug/m³) 1	2.9E-12	5.9E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total		·					1 1	2.7E-10	1	(g/		(g)	0.00008
		Exposure Point Total									2.7E-10					0.00008
	Exposure Medium Total										2.7E-10	1				0.00008
Medium Total				······································							2.4E-05	 	······································			0.8
urface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	rng/kg	1.4E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.9E-06	1.7E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.8
				Arsenic	143	mg/kg	2.3E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	3.5E-05	2.7E-04	(mg/kg/day)	3.0E-04		0.9
				Cadmium	13.1	mg/kg	2.1E-06	(mg/kg/day)	NA.	(mg/kg/day)	3.32-03	2.5E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	1
				Lead	503	mg/kg	8.2E-05	(mg/kg/day)	NA.	(mg/kg/day)		9.6E-04	(mg/kg/day)	NA	(mg/kg/day)	0.02
			1	Mercury	3.30	mg/kg	5.4E-07	(mg/kg/day)	NA.	1	,,	6.3E-06	1		(mg/kg/day)	
				Zinc	3,500	mg/kg	5.7E-04	(mg/kg/day)	NA.	(mg/kg/day)	1	II .	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Benzo(a)pyrene Equivalents	0.360	mg/kg	3.1E-07	(mg/kg/day) (mg/kg/day)	7.3E+00	(mg/kg/day)	2.3E-06	6.6E-03 6.8E-07	(mg/kg/day)	3.0E-01	(mg/kg/day)	0 02
				Aroclor-1260	4.40		7.2E-07			(mg/kg/day)	!		(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	Alocioi-1260	4.40	mg/kg	7.2E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)	1.4E-06	8.4E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Dermal Dermal	0.0.7.0.TCDD C	7 205 5	T	1.05.10	T			4.1E-05	ļ	,		T	1.1
			Denna	2,3.7.8-TCDD Equivalents	8.9E-5	mg/kg	1.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.6E-07	1.4E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
		}		Arsenic	143	mg/kg	2.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	2.9E-06	2.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.08
		}		Cadmium	13.1	mg/kg	6.0E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		7.0E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.00
				Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	1.5E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.8É-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0008
				Zinc	3,500	mg/kg	1.6E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.9E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.00006
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	8.3E-07	2.5E-07	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	2.8E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	5.6E-07	3.3E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total		···						4.5E-06]				0.09
		Exposure Point Total			····						4.5E-05					1.2
	Exposure Medium Total										4.5E-05					1.2
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	2.8E-14	mg/m³	5.6E-17	(mg/m ³)	3.8E+01	(ug/m ³) ⁻¹	2.1E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
				Arsenic	4.4E-8	mg/m³	9.0E-11	(mg/m³)	4.3E-03	(ug/m³)·1	3.9E-10	1.1E-09	(mg/m³)	1.5E-05	(mg/m³)	0.00007
				Cadmium	4.1E-9	mg/m ³	8.3E-12	(mg/m³)	1.8E-03	(ug/m³)-1	1.5E-11	9.6E-11	(mg/m³)	1.0E-05	(mg/m³)	0.000010
				Lead	1.6E-7	mg/m³	3.2E-10	(mg/m³)	NA	(ug/m³)·1		3.7E-09	(mg/m³)	NA	(mg/m³)	
			1	Mercury	1.0E-9	mg/m³	2,1E-12	(mg/m ³)	NA	(ug/m³)·1		2.4E-11	(mg/m³)	3.0E-05	(mg/m³)	0.0000008
				Zinc	1.1E-6	mg/m³	2.2E-09	(mg/m ³)	NA	(ug/m³)·1	1	2.6E-08	(mg/m³)	NA	(mg/m³)	
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m³	1.2E-12	(mg/m³)	1.1E-03	(ug/m³) ⁻¹	1.3E-12	2.6E-12	(mg/m³)	NA	(mg/m²)	
				Aroclor-1260	1.4E-9	mg/m³	2.8E-12	(mg/m³)	5.7E-04	(ug/m ³)-1	1.6E-12	3.2E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total			<u>*</u>				1	4.1E-10		, (vig)		(mg/m/)	0.00008
		Exposure Point Total		*							4.1E-10		the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa			0.00008
	Exposure Medium Total			· · · · · · · · · · · · · · · · · · ·		***************************************					4.1E-10		1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			0.00008
Medium Total					···	-					4.5E-05					1.2
ubsurface Soil	Subsurface Soil	UXO 32	Ingestion	1	T	T		1		T					T	1.2
				Arsenic	110	ma/kg	1.8E-05	(mg/kg/day)	1.5E+00	(2.7E-05	215.04	I to a final day.	2.05.07	(===(==================================	
		1		Benzo(a)pyrene Equivalents	0.480	1 .	4.2E-05	1		(mg/kg/day)		2.1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
			Exp. Route Total	Denzo(a)pyrene Equivalents	0.400	mg/kg	4.2E-U/	(mg/kg/day)	7.3E+00	(mg/kg/day)	3.0E-06	9.1E-07	(mg/kg/day)	NA	(mg/kg/day)	-
				ļ			ļ			1	3.0E-05		· · · · · · · · · · · · · · · · · · ·			0.7
		1	Dermal	l			_			1					1	1
		1		Arsenic	110	mg/kg	1.5E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	2.3E-06	1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06

TABLE 7.3.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Car	cer Risk Calcula	ations			Non-Ca	ncer Hazard C	Calculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/I	Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration	Rf	fD/RfC	Hazard Quotient
					<u> </u>		Value	Units	Value	Units	1	Value	Units	Value	Units	1
				Benzo(a)pyrene Equivalents	0.480	rng/kg	1.5E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	1.1E-06	3.3E-07	(mg/kg/day)	NΑ	(mg/kg/day)	
			Exp. Route Total							•	3.4E-06	i				0.06
		Exposure Point Total						·			3.3E-05		· · · · · · · · · · · · · · · · · · ·			0.8
	Exposure Medium Total					· • — — — — — — — — — — — — — — — — — —				"	3.3E-05		TO TOWN			0.8
	Air	UXO 32	Inhalation							T	1		1		T	1
			Ì	Arsenic	3.4E-8	mg/m ³	6 9E-11	(mg/m³)	4.3E-03	(ug/m ³):1	3.0E-10	8.1E-10	(mg/m ³)	1.5E-05	(mg/m³)	0.00005
				Benzo(a)pyrene Equivalents	1.5E-10	mg/m³	1.6E-12	(mg/m ³)	1.1E-03	(ug/m ³)-1	1 8E-12	3.5E-12	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total			•					3.0E-10			·	1	0.0001
		Exposure Point Total						·	* ***		3.0E-10					0.0001
	Exposure Medium Total					-					3.0E-10					0.0001
Medium Total											3.3E-05					0.8

TABLE 7.4 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSL RES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Medium	Exposure Medium	Exposure Paint	Exposure Route	Chemical of	E	PC		Car	ncer Risk Calcula	ations		<u> </u>	Non-Ca	incer Hazard C	alculations	· ·····
•				Potential Concern	Value	Units	Intake/Exposu	re Concentration		Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RIC	Hazard Quotier
							Value	Units	Value	Units	1	Value	Units	Value	Units	- Trazard Guotier
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	8.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.2E-05	2.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.08
				Cadmium	1.60	mg/kg	1.3E-07	(mg/kg/day)	NA.	(mg/kg/day)		3.7E-07	(mg/kg/day)	1.0E-03	(mg/kg/day)	0 0004
				Lead	65.1	mg/kg	4.5E-06	(mg/kg/day)	NA.	(mg/kg/day)		1.3E-05	(mg/kg/day)	NA.	(mg/kg/day)	
				Benzo(a)pyrene Equivalents	0.350	mg/kg	4.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)	3.3E-07	7.1E-08	(mg/kg/day)	NA.	(mg/kg/day)	
				Aroclor-1260	0.250	mg/kg	1.7E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)	3.5E-08	5.1E-08	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Route Total			-		<u> </u>		110000	1.2E-05		1	<u> </u>	(11.9.119.00))	0,08
			Dermal	Arsenic	114	mg/kg	9.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.4E-06	2.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
8			l	Cadmium	1.80	mg/kg	5.0E-10	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		1.5E-09	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.00006
				Lead	65.1	mg/kg	0.0£+00	(mg/kg/day)	NA.	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA.	(mg/kg/day)	
				Benzo(a)pyrene Equivalents	0.350	mg/kg	2.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)	1.7E-07	3.7E-08	(mg/kg/day)	NA.	(mg/kg/day)	
				Aroclor-1260	0.250	mg/kg	9.7E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)	1.9E-08	2.8E-08	(mg/kg/day)	NA NA	(mg/kg/day)	
			Exp. Route Total					1		(mg/kg/day)	1.6E-06	2.02-00	(mg/kg/day)	INA	(mg/kg/day)	0.009
		Exposure Point Total		A							1.4E-05					0.009
	Exposure Medium Total									~~···	1.4E-05				· · · · · · · · · · · · · · · · · · ·	0.09
	Air	UXO 32	Inhalation	Arsenic	3.5E-8	mg/m³	2.9E-10	(mg/m³)	4.3E-03	(ug/m³)-1	1.2E-09	8.4E-10	(ma/m³)	1,5E-05	T (3)	<u> </u>
				Cadmium	5.6E-10	mg/m³	4.5E-12	(mg/m ³)	1.8E-03	(ug/m³)-1	8.2E-12	1.3E-11	(mg/m³)	1.0E-05	(mg/m ³)	0.00006
			i	Lead	2.0E-8	mg/m³	1.6E-10	(mg/m³)	NA NA	(ug/m ³) ⁻¹	0.21-12	4.8E-10	(mg/m³)	NA	(mg/m³)	0.000001
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m³	1.6E-12	(mg/m³)	1.1E-03	(ug/m³)-1	1.8E-12	2 6E-12	(mg/m³)		(mg/m ³)	
				Aroclor-1260	7.7E-11	ma/m³	6.3E-13	(mg/m ³)	5.7E-04	(ug/m ³) ⁻¹	3.6E-13	1.8E-12	(mg/m³)	NA NA	(mg/m³)	
			Exp. Route Total		1	1g		(mg/m)	3.72.04	(ug/iii)	1.2E-09	1.85-12	(mg/m³)	IVA	(mg/m ³)	
		Exposure Point Total		<u> </u>							1.2E-09					0.00006
	Exposure Medium Total			W. C. C. C. C. C. C. C. C. C. C. C. C. C.							1.2E-09					0.00006
Medium Total					•						1.4E-05			·		0.09
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	6.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	8.1E-07	1.8E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
	}			Arsenic	68.1	mg/kg	4.8E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	7.1E-06	1.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.05
				Cadmium	69.0	mg/kg	4.8E-06	(mg/kg/day)	NA	(mg/kg/day)		1.4E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.03
				Lead	1,672	mg/kg	1.2E-04	(mg/kg/day)	NA	(mg/kg/day)		3.4E-04	(mg/kg/day)	NA.	(mg/kg/day)	
	İ			Mercury	3.30	mg/kg	2.3E-07	(mg/kg/day)	NA	(mg/kg/day)		6.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Zinc	3,500	mg/kg	2.4E-04	(mg/kg/day)	NA	(mg/kg/day)		7.1E-04	(mg/kg/day)	3.0E-01	(mg/kg/day) (mg/kg/day)	0.002
				Aroclor-1260	8.00	mg/kg	5.6E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)	1.1E-06	1.6E-06	(mg/kg/day)	NA NA		0 002
			Exp. Route Total			, , ,	-	1 (gg. 33))	2.02.700	(Hig/kg/day)	9.1E-06	1.02-00	(mg/kg/day)	INA.	(mg/kg/day)	0.08
			Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	7.4E-13	(mg/kg/day)	1.3E+05	(mg/kg/day) '	9.7E-08	2.2E-12	(mg/kg/day)	1.0E-09	((
				Arsenic	68.1	mg/kg	5.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)	8.5E-07	1.7E-06	1	3.0E-04	(mg/kg/day)	0.002
				Cadmium	69.0	mg/kg	1.9E-08	(mg/kg/day)	NA NA		0.50-07	5.6É-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.006
				Lead	1,672	mg/kg	0.0E+00	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	2.5E-05 NA	(mg/kg/day)	0.002
				Mercury	3.30	mg/kg	9.2E-10	(mg/kg/day)	NA.			2.7E-09	(mg/kg/day)		(mg/kg/day)	
			į	Zinc	3.500	mg/kg	9.7E-07	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹			(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0001
			Ť	Aroclor-1260	8.00	mg/kg	3.1E-07	(mg/kg/day)	2 0E+00	(mg/kg/day)	6.2E-07	2.8E-06	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.000009
			Exp. Route Total		0.00	1119/149	3.1E-07	(mg/kg/day)	2 05+00	(mg/kg/day) ⁻¹		9.1E-07	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total		<u> </u>							1.6E-06					0.01
	Exposure Medium Total				·						1.1E-05					0.09
	Air	UXO 32	Inhalation	2.3.7.8-TCDD Equivalents	2.8E-14		0.05.10	1	0.05.04	1	1.1E-05		7			0.09
	[]	000 32	initial accord	Arsenic	1	mg/m³	2.2E-16	(mg/m³)	3.8E+01	(ug/m³)''	8.5E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
1	.]				2.1E-8	mg/m³	1.7E-10	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	7.4E-10	5.0E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00003
	1		1	Cadmium	2.1E-8	mg/m ³	1.7E-10	(mg/m ³)	1.8E-03	(ug/m ³) ⁻¹	3.1E-10	5.1E-10	(mg/m³)	1.0E-05	(mg/m³)	0.00005
				Lead	5.2E-7	mg/m ^d	4.2E-09	(mg/m³)	NA	(ug/m³)''		1.2E-08			1 ,	

TABLE 7.4.RME CALCULATION OF CHEMICAL CANCER HISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Car	icer Risk Calcul	alions		1	Non-Ca	ncer Hazard C	alculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/	Unit Risk	Cancer Risk	Intake/Exposu	re Concentration	A	ID/RIC	Hazard Quotien
					1		Value	Units	Value	Unils	1	Value	Units	Value	Units	1
				Mercury	1.0E-9	mg/m³	8.3E-12	(mg/m³)	NA	(ug/m ²)-1		2.4E-11	(mg/m³)	3.0E-05	(mg/m³)	0.0000008
				Zinc	1.1E-6	mg/m³	8.8E-09	(mg/m ³)	NA.	(ug/m ³)·1		2.6E-08	(mg/m³)	NA	(mg/m³)	
			i	Aroclor-1260	2.5E-9	mg/m³	2 0E-11	(mg/m³)	5.7E-04	(ug/m ³) ⁻¹	1.1E-11	5.9E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total	i			1	<u> </u>	·	-1	1.1E-09	-	(g)		(g)	0.00008
		Exposure Point Total									1.1E-09	1				0.00008
	Exposure Medium Total							····			1.1E-09					0.00008
Medium Total		· · · · · · · · · · · · · · · · · · ·				***************************************				.,,,,	1.1E-05		7-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1			0.09
Surface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	6.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)	8.1E-07	1.8E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
				Arsenic	143	mg/kg	1.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.5E-05	2.9E-05	(mg/kg/day)	3.0E-04		1
				Cadmium	13.1	mg/kg	9.1E-07	(mg/kg/day)	NA NA		7.52-05	2.7E-06		1.0E-03	(mg/kg/day)	0.10
				Lead	503	mg/kg	3.5E-05		NA NA	(mg/kg/day) ⁻¹	ł	II .	(mg/kg/day)		(mg/kg/day)	0.003
				Mercury	3.30		2.3E-07	(mg/kg/day)	NA NA	(mg/kg/day)		1.0E-04	(mg/kg/day)	NA	(mg/kg/day)	-
				Zinc	3.500	mg/kg	2.3E-07 2.4E-04	(mg/kg/day)		(mg/kg/day)		6.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
			1			mg/kg	1	(mg/kg/day)	NA	(mg/kg/day)	-	7.1E-04	(mg/kg/day)	3.0È-01	(mg/kg/day)	0.002
				Benzo(a)pyrene Equivalents	0.360	mg/kg	4.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)	3.4E-07	7.3E-08	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	3.1E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	6.1E-07	9 0E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total			,					1.7E-05	<u> </u>	·,		,	0.1
			Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	7.4E-13	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	9.7E-08	2.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Arsenic	143	mg/kg	1.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.8E-06	3.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Cadmium	13.1	mg/kg	3.6E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.1E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0004
				Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	9.2E-10	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.7E-09	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0001
				Zinc	3,500	mg/kg	9.7E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.8E-06	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.000009
				Benzo(a)pyrene Equivalents	0.360	mg/kg	2.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.7E-07	3.8E-08	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	1.7E-07	(mg/kg/day)	2 0E+00	(mg/kg/day) ⁻¹	3.4E-07	5.0E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total								2.4E-06					0.01
		Exposure Point Total									1.9E-05					0.1
	Exposure Medium Total									,	1.9E-05					0.1
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	2.8E-14	mg/m ³	2.2E-16	(mg/m³)	3.8E+01	(ug/m³)-1	8.5E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
				Arsenic	4.4E-8	mg/m³	3.6E-10	(mg/m³)	4.3E-03	(ug/m³)-1	1.5E-09	1.1E-09	(mg/m³)	1.5E-05	(mg/m³)	0.00007
				Cadmium	4.1E-9	rng/m ³	3.3E-11	(mg/m³)	1.8E-03	(ug/m ³) ⁻¹	5.9E-11	9.6E-11	(mg/m³)	1.0E-05	(mg/m³)	0.000010
				Lead	1.6E-7	mg/m³	1.3É-09	(mg/m³)	NA.	(ug/m³)-1		3.7E-09	(mg/m ³)	NA	(mg/m ³)	
				Mércury	1.0E-9	mg/m³	8.3E-12	(mg/m ³)	NA.	(ug/m³)-1		2.4E-11	(mg/m ³)	3.0E-05	(mg/m ³)	0.0000008
				Zinc	1.1E-6	mg/m³	8.8E-09	(mg/m ³)	NA NA	(ug/m³)-1		2.6E-08	(mg/m ³)	NA	(mg/m³)	.,
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m ³	1.7E-12	(mg/m³)	1.1E-03	(ug/m³)-1	1.8E-12	2.6E-12	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260	1.4E-9	ma/m³	1.1E-11	(mg/m³)	5.7E-04	(ug/m³)-1	6.3E-12	3.2E-11	(mg/m³)	NΑ	(mg/m³)	
			Exp. Route Total		1	Ig		(g)	0.7204	(dg/iii)	1.6E-09	0.2.2.11	(mg/m)		(mg/m)	0.00008
		Exposure Point Total									1.6E-09	<u> </u>				0.00008
	Exposure Medium Total						<u> </u>		···		1.6E-09					0.00008
Medium Total					•						1.9E-05					0.00008
ubsurface Soil	Subsurface Soil	UXO 32	Ingestion	I	T	 	ļ			T	1.9E-U3		T		T	0.1
dustriace our	Odosuriace Son	020 25	Ingestion				3.75.05			1						
				Arsenic	110	mg/kg	7.7E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.2E-05	2 2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0 07
				Benzo(a)pyrene Equivalents	0.480	mg/kg	6.1E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)	4.5E-07	9.8E-08	(mg/kg/day)	NA	(mg/kg/day)	ļ
			Exp. Route Total		γ			T			1.2E-05	<u> </u>	,			0.07
			Dermal					1								
	i .	I	1	Arsenic	110	mg/kg	9.2E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.4E-06	2.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009

ARA TABLE 7.4 MAR. CALCULATION OF CHEMICAL CANCER RASIN ROUNCANCER HAZARDS REAGONABLE MANIMIXAM SUBANCEAS CANALYRAM, DASH ANIMIXAM PAGE 3 OF 3

Scenario Timeframe: Future Receptor Population: Recreational User Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Can	cer Risk Calcula	ations		1	Non Co	ncer Hazard C	alanda Cara	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/I	Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration		D/RfC	Hazard Quotie
		}					Value	Units	Value	Units	1	Value	Units	Value	Units	- Tazaro Guorie
				Benzo(a)pyrene Equivalents	0.480	mg/kg	3.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) '	2.3E-07	5.1E:08	(mg/kg/day)	NA	(mg/kg/day)	†
		Exposure Point Total	Exp. Route Total			····					1.6E-06		<u> </u>		1 3 . 3 //	0.009
	Exposure Medium Total	Expositive Foliat (otal									1 4E-05		-			0.08
	Air	UXO 32	Inhalation		r	7			· · · · · · · · · · · · · · · · · · ·		1.4E-05					0.08
				Arsenic Benzo(a)pyrene Equivalents	3.4E-8 1.5E-10	mg/m³	2.8E-10 2.2E-12	(mg/m³) (mg/m³)	4.3E-03 1.1E-03	(ug/m³)·¹	1.2E-09 2.4E-12	8.1E-10 3.5E-12	(mg/m³)	1.5E-05	(mg/m³)	0.00005
			Exp. Route Total					1 (9 /	1112 00		1.2E-09	3.5E-12	(mg/m³)	NA .	(mg/m³)	0.00005
	Exposure Medium Total	Exposure Point Total		the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa							1.2E-09				1,2,	0.00005
Medium Total	<u> </u>					S					1.2E-09					0.00005
							L			_	1.4E-05					0.08

TABLE 7.5 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Child

	Exposure Medium	Exposure Point	Exposure Route	Chemical of		EPC	_	Car	icer Risk Calcul	ations			Non-Ca	ncer Hazard (Calculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF	Unit Risk	Cancer Risk	Intake/Exposi	ure Concentration		I/D/RIC	Hazard Quoti
urface Soil (current)	0.1.	1					Value	Units	Value	Units		Value	Units	Value	Units	nazaro Quoti
rrace Soir (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	1.2E-04	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.9E-04	1.5E-03	(mg/kg/day)	3 0E-04	(mg/kg/day)	4.9
				Cadmium	1.80	mg/kg	2.0E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.3É-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.02
		[Lead	65.1	mg/kg	7.1E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		8.3E-04	(mg/kg/day)	NA.	(mg/kg/day)	0.02
				Benzo(a)pyrene Equivalents	0.350	mg/kg	2.0E-06	(mg/kg/day)	7.3E+00	(mg/kg/day) 1	1.5E-05	4.5E-06	(mg/kg/day)	NA NA	(mg/kg/day)	
				Araclar-1260	0.250	mg/kg	2.7E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)	5.5E-07	3.2E-06	(mg/kg/day)	NA NA		
	ļ		Exp. Route Total							[(mg/mg/ddy)	2.0E-04		(mg/kg/day)	NA .	(mg/kg/day)	
	İ		Dermal	Arsenic	114	mg/kg	1.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.6E-05	1 2E-04	(mg/kg/day)	3.0E-04	T / # 77 1	4.9
				Cadmium	1.80	mg/kg	5.5E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.4E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.4
				Lead	65.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day) (mg/kg/day)	-2.5E-05 NA	(mg/kg/day)	0.003
				Benzo(a)pyrene Equivalents	0.350	mg/kg	7.4E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	5.4E-06	1.6E-06	(mg/kg/day)	NA NA	(mg/kg/day)	-
			L	Arocior-1260	0.250	mg/kg	1.1E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	2.1E-07	1.3E-06			(mg/kg/day)	-
			Exp. Route Total					1 , 3 -3 //		(rig/kg/day)	2.1E-05	1.32-06	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total						**************************************			2.2E-04					0.4
	Exposure Medium Total										2.2E-04					5.3
	Air	UXO 32	Inhalation	Arsenic	1.0E-8	mg/m³	8.5E-10	(mg/m ³)	4.3E-03	1 (au*						5.3
				Cadmium	1.6E-10	mg/m³	1.3E-11	(mg/m ³)	1.8E-03	(ug/m ³)''	3.7E-09	9.9E-09	(mg/m³)	1.5E-05	(mg/m³)	0 0007
				Lead	5.9E-9	mg/m ³	4.9E-10	(mg/m ³)	NA	(ug/m³)''	2.4E-11	1.6E-10	(mg/m³)	1.0E-05	(mg/m³)	0.00002
				Benzo(a)pyrene Equivalents	3.2E-11	mg/m³	1.4E-11			(ug/m³) ⁻¹		5.7E-09	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260	2.3E-11	mg/m ³	1.9E-12	(mg/m³)	1.1E-03 5.7E-04	(ug/m³)"	1.5E-11	3.1E-11	(mg/m³)	·NA	(mg/m³)	
			Exp. Route Total		2.02	mg/m	1.55-12	(mg/m³)	5.7E-U4	(ug/m ³) ⁻¹	1.1E-12	2.2E-11	(mg/m³)	NA .	(mg/m³)	
		Exposure Point Total		l							3.7E-09					0.0007
	Exposure Medium Total		<u> </u>		· ·						3.7E-09				***	0.0007
Medium Total											3.7E-09					0.0007
urface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	l ma/ka	225.44	I (, , , , , , , , , , , , , , , , , , , 	2.2E-04					5.3
	1 '' '		1 *	Arsenic	68.1	mg/kg	9.8E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.3E-05	1.1E-09	(mg/kg/day)	1.0E-09	(mg/kg/day)	1.1
	1															
	1					mg/kg	7.5E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.1E-04	8.7E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	2.9
				Cadmium	69.0	mg/kg	7.6E-05	(mg/kg/day)	NA	(mg/kg/day)	1.1E-04 	8.7E-04 8.8E-04	(mg/kg/day) (mg/kg/day)	3.0E-04 1.0E-03	(mg/kg/day) (mg/kg/day)	2.9 0.9
				Cadmium Lead	69.0 1,672	mg/kg mg/kg	7.6E-05 1.8E-03	(mg/kg/day) (mg/kg/day)	NA NA	1			1			
				Cadmium Lead Mercury	69.0 1,672 3.30	mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA	(mg/kg/day) '		8.8E-04	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.9
				Cadmium Lead Mercury Zinc	69.0 1,672 3.30 3.500	mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03	(mg/kg/day) (mg/kg/day)	NA NA	(mg/kg/day) 1 (mg/kg/day) 1		8.8E-04 2.1E-02	(mg/kg/day) (mg/kg/day)	1.0E-03 NA	(mg/kg/day) (mg/kg/day)	0.9
				Cadmium Lead Mercury	69.0 1,672 3.30	mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹		8.8E-04 2.1E-02 4.2E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9
			Exp. Route Total	Cadmium Lead Mercury Zinc Aroclor-1260	69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹		8.8E-04 2.1E-02 4.2E-05 4.5E-02	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1
			Exp. Route Total Dermal	Cadmium Lead Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents	69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	 1.8E-05	8.8E-04 2.1E-02 4.2E-05 4.5E-02	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1
			Exp. Route Total of Dermal	Cadmium Lead Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents Arsenic	69.0 1,672 3.30 3.500 8.00 8.9E-5 68.1	mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA NA 2.0E+00	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	1.8E-05 1.4E-04	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2
			Exp. Route Total of Dermal	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCDD Equivalents Arsenic Cadmium	69.0 1,672 3.30 3.500 8.00 8.9E-5 68.1 59.0	mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA NA 2.0E+00	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ³ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	1.8E-05 1.4E-04 1.1E-06	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10
			Exp. Route Total of Dermal	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCOD Equivalents Arsenic Cadmium Lead	69.0 1,672 3.30 3.500 8.00 8.9E-5 68.1	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2.0E+00 1.3E+05 1.5E+00	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	1.8E-05 1.4E-04 1.1E-06 9.4E-06	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10 0.2
			Exp. Route Total Dermal	Cadmium Lead Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury	69.0 1,672 3.30 3.500 8.00 8.9E-5 68.1 59.0	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA	(mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1	1.8E-05 1.4E-04 1.1E-06 9.4E-06	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10 0.2 0.10
			Exp. Route Total Dermal	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCOD Equivalents Arsenic Cadmium Lead	8.9E-5 68.1 59.0 1,672	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA	(mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1	1.8E-05 1.4E-04 1.1E-06 9.4E-06	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10 0.2 0.10
			Exp. Route Total Dermal	Cadmium Lead Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury	8.9E-5 68.1 69.0 1.672 3.30 3.500 8.00 8.9E-5 68.1 59.0 1.672 3.30	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07 0.0E+00 1.0E-08	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.8E-05 1.4E-04 1.1E-06 9.4E-06	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00 1.2E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10 0.2 0.10
			Exp. Route Total Dermal	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	8.9E-5 68.1 59.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07 0.0E+00 1.0E-08 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.8E-05 1.4E-04 1.1E-06 9.4E-06	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00 1.2E-07 1.3E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10 0.2 0.10
		Exposure Point Total	Exp. Route Total Dermal	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	8.9E-5 68.1 59.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07 0.0E+00 1.0E-08 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.8E-05 1.4E-04 1.1E-06 9.4E-06	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00 1.2E-07 1.3E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10 0.2 0.10 0.006 0.0004 0.4
	Exposure Medium Total	Exposure Point Total	Exp. Route Total Dermal	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	8.9E-5 68.1 59.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07 0.0E+00 1.0E-08 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.8E-05 1.4E-04 1.1E-06 9.4E-06 0.9E-06 1.7E-05	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00 1.2E-07 1.3E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.0E-03 NA 3.0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 0.1 5.2 0.10 0.2 0.10 0.006 0.0004 0.4 5.7
	Exposure Medium Total	Exposure Point Total UXO 32	Exp. Route Total Dermal Exp. Route Total	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	8.9E-5 68.1 59.0 1.672 3.30 3.500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07 0.0E+00 1.0E-08 1.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA NA 2 0E+00 1.3E+05 1.5E+00 NA NA NA NA	(mg/kg/day) 1 (mg/kg/day) 1	1.8E-05 1.4E-04 1.1E-06 9.4E-06 6.9E-06 1.7E-05 1.6E-04	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00 1.2E-07 1.3E-04 4.0E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 0E-03 NA 3 0E-04 3 0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 5.2 0.10 0.2 0.10 0.006 0.0004 0.4 5.7 5.7
	Exposure Medium Total		Exp. Route Total Dermal Exp. Route Total	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	89.0 1,672 3.30 3,500 8.00 8.9E-5 68.1 59.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-03 8.8E-06 8.2E-12 6.3E-06 2.1E-07 0.0E+00 1.0E-08 1.1E-05 3.4E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA 2 0E+00 1.3E+05 1.5E+00 NA NA NA 2.0E+00	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	1.8E-05 1.4E-04 1.1E-06 9.4E-06 6.9E-06 1.7E-05 1.6E-04 1.6E-04 2.5E-11	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00 1.2E-07 1.3E-04 4.0E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 0E-03 NA 3 0E-04 3 0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3 0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 0.1 5.2 0.10 0.2 0.10 0.006 0.0004 5.7 5.7 0.0000002
	Exposure Medium Total		Exp. Route Total Dermal Exp. Route Total	Cadmium Lead Mercury Zinc Aroclor-1250 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	89.0 1,672 3.30 3.500 8.00 6.9E-5 68.1 59.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	7.6E-05 1.8E-03 3.6E-06 3.8E-06 8.8E-06 0.2E-12 6.3E-06 2.1E-07 0.0E+00 1.0E-08 1.1E-05 3.4E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA NA NA 2 0E+00 1.3E+05 1.5E+00 NA NA NA NA	(mg/kg/day) 1 (mg/kg/day) 1	1.8E-05 1.4E-04 1.1E-06 9.4E-06 6.9E-06 1.7E-05 1.6E-04	8.8E-04 2.1E-02 4.2E-05 4.5E-02 1.0E-04 9.6E-11 7.3E-05 2.5E-06 0.0E+00 1.2E-07 1.3E-04 4.0E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1 0E-03 NA 3 0E-04 3 0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.9 0.1 0.1 0.1 5.2 0.10 0.2 0.10 0.006 0.0004 0.4 5.7

TABLE 7.5.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES
UXO 32, INDIAN HEAD, MARYLAND

PAGE 2 OF 3

Scenario Timeframe: Fulure Receptor Population: Resident Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route			EPC		Car	ncer Risk Calcu	dations			~			
			ļ	Potential Concern	Value	Units	Intake/Expos	ure Concentration		-/Unit Risk		ř		ancer Hazard (
							Value	Units	Value		Cancer Risk		ure Concentration		RID/RIC	Hazard Quotien
				Marcury	3.0E-10	mg/m³	2.5E-11			Units		Value	Units	Value	Units	
			1	Zinc	3.2E-7	mg/m ³	2.6E-08	(mg/m³)	NA	(ug/m³)·1		2.9E-10	(mg/m³)	3.0E-05	(mg/m³)	0.000010
				Aroclor-1260	7.3E-10	1 *		(mg/m³)	NA	(ug/m ³) ⁻¹	1	3.1E-07	(mg/m³)	NA NA	(mg/m³)	
			Exp. Route Total		7.3E-10	mg/m ³	6.0E-11	(mg/m³)	5.7E-04	(ug/m ³) ⁻¹	3.4E-11	7.0E-10	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total	Cxp. Hoose 70tal								3.2E-09			<u> </u>	1	0.001
	Exposure Medium Total	Empodere Form Total									3.2E-09					0.001
Medium Total											3.2E-09					0.001
Surface Soil (future)	Surface Soil (future)	1000	· T · · · · · · · · · · · · · · · · · ·								1.6E-04					
ourrage con (rataro)	Surface Soil (luture)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	9.8E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) '	1.3E-05	1.1E-09	(mg/kg/day)	1.05.00	T	5.7
				Arsenic	143	mg/kg	1.6E-04	(mg/kg/day)	1 5E+00	(mg/kg/day) ⁻¹	2.4E-04	1.8E-03	1	1.0E-09	(mg/kg/day)	1.1
		ĺ		Cadmium	13.1	mg/kg	1.4E-05	(mg/kg/day)	NA		2.46-04	l)	(mg/kg/day)	3.0E-04	(mg/kg/day)	6.1
		}	1	Lead	503	mg/kg	5.5E-04	(mg/kg/day)	NA.	(mg/kg/day)		1.7E-04	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.2
				Mercury	3.30	mg/kg	3.6E-06	1		(mg/kg/day) ⁻¹		6.4E-03	(mg/kg/day)	NA	(mg/kg/day)	
			1	Zinc	3,500	mg/kg	1	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
		,		Benzo(a)pyrene Equivalents	0.360		3.8E-03	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.5E-02	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.1
			1	Aroclor-1260		mg/kg	2.1E-06	(mg/kg/day)	7.3E+00	(mg/kg/day) '	1.5E-05	4.6E-06	(mg/kg/day)	NA	(mg/kg/day)	
		,	Exp. Route Total		4.40	mg/kg	4.8E-06	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	9.6E-06	5.6E-05	(mg/kg/day)	NA NA	(mg/kg/day)	ĺ
							L			-	2.7E-04				1 . 3 . 3 //	7.7
			Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	8.2E-12	(mg/kg/day)	1 3E+05	(mg/kg/day) ⁻¹	1.1E-06	9.6E-11	(mg/kg/day)	1.0E-09	(malles/do.)	
				Arsenic	143	mg/kg	1.3E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	2.0E-05	1.5E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.10
				Cadmium	13.1	mg/kg	4.0E-08	(mg/kg/day)	NA	(mg/kg/day)		4 7E-07	1		(mg/kg/day)	0.5
				Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA				(mg/kg/day)	2.5E-05	(mg/kg/day)	0.02
			1	Mercury	3.30	mg/kg	1.0E-08	(mg/kg/day)	NA.	(mg/kg/day) 1	l f	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Zinc	3,500	mg/kg	1.1E-05	(mg/kg/day)		(mg/kg/day)		1.2E-07	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.006
				Benzo(a)pyrene Equivalents	0.360	mg/kg	7.7E-07	1 1	NA	(mg/kg/day) ⁻¹		1.3E-04	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.0004
				Aroclor-1260				(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	5.6E-06	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	7.100.01.1200	4.40	mg/kg	1.9E-06	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	3.8E-06	2.2E-05	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total	Exp. Hodie Total								3.0E-05					0.6
	Exposure Medium Total	and a series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of the series of									3.0E-04					8.3
	Δir	UXO 32		T-"							3.0E-04				· · · · · · · · · · · · · · · · · · ·	8.3
	i i	UXU 32	Inhalation	2,3,7,8-TCDD Equivalents	8.1E-15	mg/m³	6.7E-16	(mg/m³)	3.8E+01	(ug/m³)·1	2.5E-11	7.8E-15	(mg/m³)	4.0E-08		
			1	Arsenic	1.3E-8	mg/m³	1.1E-09	(mg/m ³)	4 3E-03	(ug/m³):	4.6E-09	1.2E-08	(mg/m³)		(mg/m³)	0.0000002
				Cadmium	1.2E-9	mg/m³	9.8E-11	(mg/m³)	1.8E-03	(ug/m ³)-1	1.8E-10	1.1E-09	1	1.5E-05	(mg/m ³)	0.0008
	[1	Lead	4.6E-8	mg/m³	3.8E-09	(mg/m ³)	NA	(ug/m ⁻) ⁻¹	1.86-10		(mg/m³)	1.0E-05	(mg/m ³)	0.0001
		•		Mercury	3.0E-10	mg/m³	2.5E-11	(mg/m ³)	NA.	1		4.4E-08	(mg/m³)	NA	(mg/m³)	
				Zinc	3.2E-7	mg/m³	2.6E-08	1 1		(ug/m³) ⁻¹		2.9E-10	(mg/m³)	3.0E-05	(mg/m³)	0.000010
				Benzo(a)pyrene Equivalents	3.3E-11	1 .		(mg/m³)	NA.	(ug/m³) ⁻¹		3.1E-07	(mg/m³)	NA	(mg/m³)	
	1		1	Aroclor-1260		mg/m³	1.4E-11	(mg/m³)	1.1E-03	(ug/m ³) ⁻¹	1.6E-11	3.1E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total	7100101-1200	4.0E-10	mg/m³	3.3E-11	(mg/m³)	5.7E-04	(ug/m³) ⁻¹	1.9E-11	3.8E-10	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total	L -Ap. House Total								4.BE-09				· · · · · · · · · · · · · · · · · · ·	0.0010
	Exposure Medium Total										4.8E-09					0.0010
Medium Total	T										4.8E-09		· · · · · · · · · · · · · · · · · · ·			0.0010
bsurface Soil	Subsurface Soil	1110.00									3.0E-04					8.3
	Supplifiace Soil	UXO 32	Ingestion							 				 1		0.3
				Arsenic	110	mg/kg	1.2E-04	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.8E-04	1 4E-03	/ma/ka/davi			1
				Benzo(a)pyrene Equivalents	0.480	mg/kg	2.8E-06	(mg/kg/day)	7.3E+00	1	l l		(mg/kg/day)	3.0E-04	(mg/kg/day)	4.7
	į l		Exp. Route Total		<u> </u>			(g.ng.ddy)	7.00+00	(mg/kg/day)	2.0E-05	6.1E-06	(mg/kg/day)	NA	(mg/kg/day)	1.
			Dermai	· · · · · · · · · · · · · · · · · · ·						,	2.0E-04					4.7
	ļ			Arsenic												
			1	CI SOLIC	110	mg/kg	1.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)"	1.5E-05	1.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4

TABLE 7.5 RME CALCULATION OF CHEMICAL CANGER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe, Future Receptor Population: Resident Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC	l	Can	cer Risk Calcula	tions			Non-Ca	ncer Hazard C	alculations	
			1	Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/L	Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration	Rf	fD/RfC	Hazard Quotien
							Value	Units	Value	Units	1	Value	Units	Value	Units	1
				Benzo(a)pyrene Equivalents	0.480	mg/kg	1.0E-06	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	7.5E-06	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total								2.3E-05					0.4
		Exposure Point Total									2.2E-04					5.1
,	Exposure Medium Total										2.2E-04					5.1
	Air	UXO 32	Inhalation													<u> </u>
				Arsenic	1.0E-8	mg/m³	8.2E-10	(mg/m³)	4.3E-03	(ug/m³)·1	3.5E-09	9.6E-09	(mg/m³)	1.5E-05	(mg/m³)	0.0006
			<u> </u>	Benzo(a)pyrene Equivalents	4.4E-11	mg/m³	1.9E-11	(mg/m ³)	1.1E-03	(ug/m³)-1	2.1E-11	4.2E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total								3.6E-09					0.001
		Exposure Point Total									3.6E-09			·	**********	0.001
	Exposure Medium Total										3.6E-09					0.001
Medium Total								<u> </u>			2.2E-04					5.1

TABLE 7.6 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future :Receptor Population Resident :Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	F	PC		0	noor Piets Oct	aliana		1				
			•	Potential Concern	Value	Units	Intake/Exposi	ure Concentration	cer Risk Calcul	Unit Risk	T	interfered Co.		ancer Hazard (
							Value	Units	Value	Units	Cancer Risk		ure Concentration	<u> </u>	ID/RIC	Hazard Quolier
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	5.4E-05	(mg/kg/day)	1.5E+00		205.00	Value	Units	Value	Units	<u> </u>
		Į	İ	Cadmium	1.80	mg/kg	8.5E-07	(mg/kg/day)	NA	(mg/kg/day)	8.0E-05	1.6E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.5
				Lead	65.1	mg/kg	3.1E-05	(mg/kg/day)	NA NA	(mg/kg/day) ⁻¹		2.5E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.002
				Benzo(a)pyrene Equivalents	0.350	mg/kg	3.0E-07	1	ĺ	(mg/kg/day) ⁻¹		8.9E-05	(mg/kg/day)	NA	(mg/kg/day)	-
			1	Aroclor-1260	0.250	mg/kg	1.2E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	2.2E-06	4.8E-07	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Route Total	1	1. 0230	iligrikg	1.25-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ¹	2.3E-07	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Dermal	Arsenic	114	mg/kg	6 4E-06	(markette)		1	8.3E-05		·, ·····			0.5
1			.	Cadmium	1.80	mg/kg	3.4E-09	(mg/kg/day)	1.5E+00	(mg/kg/day):	9.6E-06	1.9E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Lead	65.1	1	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) 1		9.8E-09	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0004
			-	Benzo(a)pyrene Equivalents	0.350	mg/kg	((mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
			ĺ	Aroclor-1260	0.250	rng/kg	1.6E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	1.1E-06	2.5E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	A100001-1280	0.250	mg/kg	6,6E-08	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.3E-07	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total	Exp. House Total		·····						1.1E-05					0.06
	Exposure Medium Total										9.4E-05					0.6
	Air	UXO 32	Inhalation	Arsenic	1.05.6	T					9.4E-05					0.6
		0.000	I I I I I I I I I I I I I I I I I I I	Cadmium	1.0E-8	mg/m³	3.4E-09	(mg/m³)	4.3E-03	(ug/m³):'	1.5E-08	9.9E-09	(mg/m³)	1.5E-05	(mg/m³)	0.0007
					1.6E-10	mg/m³	5.4E-11	(mg/m³)	1.8E-03	(ug/m³)-1	9.7E-11	1.6E-10	(mg/m³)	1.0E-05	(mg/m ³)	0.00002
				Lead	5.9E-9	mg/m³	1.9E-09	(mg/m³)	NA	{ug/m³)' 1		5.7E-09	(mg/m³)	NA	(mg/m³)	
			1	Benzo(a)pyrene Equivalents	3.2E-11	mg/m³	1.9E-11	(mg/m³)	1.1E-03	(ug/m³) ⁻¹	2.1E-11	3 1E-11	(mg/m³)	NA	(mg/m ³)	
				Arocior-1260	2.3E-11	mg/m ³	7.5E-12	(mg/m³)	5.7E-04	(ug/m ³)-1	4.3E-12	2.2E-11	(mg/m³)	NA	(mg/m ³)	
		Exposure Point Total	Exp. Route Total								1.5E-08					0.0007
	Exposure Medium Total	exposure Point Total									1.5E-08					0.0007
Medium Total	Exposure Medium rotal										1.5E-08					0.0007
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	-								9.4E-05		· · · · · · · · · · · · · · · · · · ·			0.6
our rade con (ander cap)	(drider cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	4.2E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	5.4E-06	1.2E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.1
			}	Arsenic	68.1	mg/kg	3.2E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	4.8E-05	9.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.3
				Cadmium	69.0	mg/kg	3.2E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		9.5Ê-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.1
				Lead	1,672	mg/kg	7.9E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.3E-03	(mg/kg/day)	NA	(mg/kg/day)	
			Ì	Mercury	3.30	mg/kg	1.5E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.5E-06	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.02
	1			Zinc	3,500	mg/kg	1.6E-03	(mg/kg/day)	NA	(mg/kg/day):1		4.8E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.02
				Arocior-1260	8.00	mg/kg	3.8E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	7.5E-06	1.1E-05	(mg/kg/day)	NA.	(mg/kg/day) (mg/kg/day)	0.02
			Exp. Route Total			"]					6.1E-05		1 . 3 . 3 . 5 //		(mgrkgrosy)	0.6
			Dermal	2.3,7,8-TCDD Equivalents	8.9E-5	mg/kg	5.0E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	6.5E-07	1.5E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	
			1	Arsenic	68 1	mg/kg	3 8E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	5.7E-06	1.1E-05	(mg/kg/day)	3.0E-04		0.01
				Cadmium	69.0	mg/kg	1.3E-07	(mg/kg/day)	NΑ	(mg/kg/day) ⁻¹		3.8E-07	(mg/kg/day) (mg/kg/day)		(mg/kg/day)	0 04
				Lead	1,672	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00		2.5E-05	(mg/kg/day)	0.02
•				Mercury	3.30	mg/kg	6 2E-09	(mg/kg/day)	NA	(mg/kg/day)		1.8E-08	(mg/kg/day)	NA 0.15.05	(mg/kg/day)	
			1	Zinc	3,500	mg/kg	6.6E-06	(mg/kg/day)	NA	(mg/kg/day).1		1.8E-08 1.9E-05	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0009
				Arodor-1260	8.00	mg/kg	2.1E-06	(mg/kg/day)	2.0E+00	(mg/kg/day) '	4.2E-06	1.9E-05 6.1E-06	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.00006
			Exp. Route Total					(9.19.00)/	2.02.400	(mg/kg/day)		6.15-06	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total		· · · · · · · · · · · · · · · · · · ·							1.1E-05 7.2E-05					0.07
	Exposure Medium Total		7.7						·							0.6
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	8.1E-15	mg/m ³	2.7E-15	(mg/m³)	3.8E+01	1 6 - 1 301	7.2E-05					0.6
			1	Arsenic	6.2E-9	mg/m ³	2.0E-09			(ug/m³) ⁻¹	1.0E-10	7.8E-15	(mg/m³)	4.0E-08	(mg/m³)	0.0000002
			1	Cadmium	6.3E-9	mg/m ³	2.1E-09	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	8.8E-09	5.9E-09	(mg/m³)	1.5E-05	(mg/m ³)	0.0004
				Lead	1.5E-7	mg/m² mg/m³	2.1E-09 5.0E-08	(mg/m³) (mg/m³)	1.8E-03 NA	(ug/m³)·¹ (ug/m³)·¹	3.7E-09	6.0E-09	(mg/m³)	1.0E-05	(mg/m³)	0.0006
												1.5E-07				

TABLE 7.6 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Car	ncer Risk Calcul	alions			Non-Ca	incer Hazard C	alculations	
				Potential Concern	Value	Units	Intake/Exposu	ure Concentration	CSF/	Unit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RIC	Hazard Quotie
							Value	Units	Value	Units	1	Value	Units	Value	Units	- Hazaro Quotie
				Mercury	3.0E-10	mg/m ³	9.9E-11	(mg/m³)	NA	(ug/m³) ⁻¹		2.9E-10	(mg/m³)	3.0E-05	+	0.000010
				Zinc	3.2E-7	mg/m ³	1.0E-07	(mg/m ³)	NA NA	(ug/m ³) ⁻¹		3.1E-07	(mg/m³)	NA NA	(mg/m³)	0.000010
				Aroclor-1260	7.3E-10	mg/m³	2.4E-10	(mg/m³)	5.7E-04	(ug/m ³) ⁻¹	1.4E-10	7.0E-10		NA NA	(mg/m³)	
			Exp. Route Total			1 <u> </u>	1	, (g/		(ugiii)	1.3E-08	7.02-10	(mg/m³)	IVA	(mg/m³)	
		Exposure Point Total									1.3E-08			************		0.001
	Exposure Medium Total						 				1.3E-08			<u></u>		0.001
Medium Total											7.2E-05				T	0.001
Surface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	4.2E-11	(mg/kg/day)	1.3E+05	(mg/kg/day)	5.4E-06	1.2E-10	(m = 0 = (d = 2	1.0E-09	1	0.6
				Arsenic	143	mg/kg	6.7E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.0E-04	2.0E-04	(mg/kg/day)		(mg/kg/day)	0,1
			1	Cadmium	13.1	mg/kg	6.2E-06	(mg/kg/day)	NA	1		N .	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
	}		1	Lead	503	mg/kg	2.4E-04		NA.	(mg/kg/day) ⁻¹		1.8E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.02
			1	Mercury	3.30	mg/kg	1.5E-06	(mg/kg/day)		(mg/kg/day)	* *	6.9E-04	(mg/kg/day)	NA	(mg/kg/day)	
				Zinc	3,500			(mg/kg/day)	NA NA	(mg/kg/day)	••	4.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
		ĺ		Benzo(a)pyrene Equivalents		mg/kg	1.6E-03	(mg/kg/day)	NA NA	(mg/kg/day) ⁻¹		4 8E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.02
				Aroclor-1260	0.360	mg/kg	3.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	2.3E-06	4.9E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	Arocior-1260	4.40	mg/kg	2.1E-06	(mg/kg/day)	2 0E+00	(mg/kg/day) 1	4.1E-06	6.0E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Dermal Dermal	2,3,7,8-TCDD Equivalents		 -	ļ			·	1.1E-04					0.8
			Dermar		8.9E-5	mg/kg	5.0E-12	(mg/kg/day)	1.3E+05	(mg/kg/day): 1	6.5E-07	1.5E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
				Arsenic	143	mg/kg	8.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.2E-05	2.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.08
				Cadmium	13.1	rng/kg	2.5E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		7.2E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.00
				Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	6.2E-09	(mg/kg/day)	· NA	(mg/kg/day)-1		1 8E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0009
				Zinc .	3,500	mg/kg	6.6E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.9E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.00006
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1.6E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.2E-06	2.6E-07	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	1.2E-06	(mg/kg/day)	2 0E+00	(mg/kg/day) ⁻¹	2.3E-06	3.4E-06	(mg/kg/day)	NA	(mg/kg/day)	ļ
			Exp. Route Total								1.6E-05				1	0.10
		Exposure Point Total							·		1.3E-04	 				0.9
	Exposure Medium Total										1.3E-04					0.9
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	8.1E-15	mg/m³	2.7E-15	(mg/m³)	3.8E+01	(ug/m³):1	1.0E-10	7.8E-15	(mg/m³)	4.0E-08	(mg/m ³)	0.0000002
				Arsenic	1.3E-8	mg/m³	4.3E-09	(mg/m³)	4.3E-03	(ug/m ³)-1	1.8E-08	1.2E-08	(mg/m³)	1.5E-05	(mg/m³)	0.0008
				Cadmium	1.2E-9	mg/m³	3.9E-10	(mg/m³)	1.8E-03	(ug/m³) ⁻¹	7.0E-10	1.1E-09	(mg/m³)	1.0E-05	(mg/m³)	0.0001
				Lead	4.6E-8	mg/m ³	1.5E-08	(mg/m³)	NA	(ug/m ³)-1		4.4E-08	(mg/m³)	NA.	(mg/m ³)	0.0001
				Mercury	3.0E-10	mg/m³	9.9E-11	(mg/m³)	NA	(ug/m³)-'		2.9E-10	(mg/m ³)	3.0E-05		
				Zinc	3.2E-7	mg/m ⁰	1.0E-07	(mg/m³)	NA	(ug/m³)-1		3 1E-07	1 1	NA	(mg/m³)	0.000010
	!			Benzo(a)pyrene Equivalents	3.3E-11	mg/m ⁰	2.0E-11	(mg/m ³)	1.1E-03	(ug/m ³) ⁻¹	2.2E-11	3.1E-11	(mg/m³)	NA NA	(mg/m³)	-
	1			Aroclor-1260	4.0E-10	mg/m³	1.3E-10	(mg/m³)	5.7E-04	(ug/m³)·1	7.5E-11	3.8E-10	(mg/m²)		(mg/m³)	**
			Exp. Route Total			gr.ii		(mg/m)	5.72-04	(ug/m)	.1.9E-08	3.00-10	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total	<u> </u>	· · · · · · · · · · · · · · · · · · ·							1.9E-08					0.0010
	Exposure Medium Total				·····				· <u> </u>		1.9E-08					0.0010
Medium Total											1.9E-08 1.3E-04					0.0010
Subsurface Soil	Subsurface Soil	UXO 32	Ingestion					T			1.3E-04		, , , , , , , , , , , , , , , , , , , 			0.9
				Arsenic	110	malka	5.2E-05	(mallimide)	4.55.05]						
				Benzo(a)pyrene Equivalents	0.480	mg/kg		(mg/kg/day)	1.5E+00	(mg/kg/day) 1	7.7 É- 05	1.5E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.5
			Exp. Route Total	ponco(a)pyrene Equivalents	0.460	mg/kg	4.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	3.0E-06	6.6E-07	(mg/kg/day)	NA	(mg/kg/day)	-
			Dermal				ļ	· · · · ·		 _	8.1E-05					0.5
			Dermai	l									1			
	i l			Arsenic	110	mg/kg	6.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	9.3E-06	1.8E-05	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.06

TABLE 7.6 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route		E	PC		Can	cer Risk Calcula	ations		Y	Non-Cs	ncer Hazard C	'alaulatiess	
			ļ	Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/I	Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RIC	Hazard Quotier
							Value	Units	Value	Units	1	Value	Units	Value	Units	- Hazaro Guotier
				Benzo(a)pyrene Equivalents	0.480	mg/kg	2.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.6E-06	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total	Exp. Route Total								1.1E-05		1		1 (0.06
	Exposure Medium Total	Exposure Point Total									9.1E-05					0.6
	Air	UXO 32	Inhalation	T							9.1E-05					0.6
		0.00 32		Arsenic Benzo(a)pyrene Equivatents	1.0E-8 4.4E-11	mg/m³	3.3E-09 2.6E-11	(mg/m³) (mg/m³)	4.3E-03 1.1E-03	(ug/m³) ⁻¹ (ug/m³) ⁻¹	1.4E-08 2.9E-11	9.6E-09 4.2E-11	(mg/m³) (mg/m³)	1.5E-05 NA	(mg/m³) (mg/m³)	0.0006
		Exposure Point Total	Exp. Route Total								1.4E-08					0.001
	Exposure Medium Total						<u> </u>				1.4E-08					0.001
Medium Total					 -						1.4E-08					0.001
	·	····									9.1E-05					0.6

TABLE 7.7.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timelrame: CurrenVFuture Receptor Population: Construction Worker Receptor Age: Adult

Medium	Exposure Medium	Expasure Point	Exposure Route	Chemical of	E	EPC	l	Can	cer Risk Calculi	ations			Non-Ca	ncer Hazard C	Calculations	· · · · · · · · · · · · · · · · · · ·
				Potential Concern	Value	Units	intake/Exposu	re Concentration		Unit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RIC	Tu - 10 -
							Value	Units	Value	Units	- Cancer Hisk	Value	Units	Value	Units	Hazard Quotien
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	5.3E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	7.9E-06	3.7E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.2
				Cadmium	1.80	mg/kg	8.3E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		5.8E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.01
				Lead	65.1	mg/kg	3.0E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.1E-04	(mg/kg/day)	NA.	(mg/kg/day)	0.01
				Benzo(a)pyrene Equivalents	0.350	mg/kg	1.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.2E-07	1.1E-06	(mg/kg/day)	NA -	(mg/kg/day)	
				Aroclor-1260	0.250	mg/kg	1.2E-08	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	2.3E-08	8.1E-07	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Roule Total					1		(inging/day)	8.0E-06	- VIII VI	(mg/kg/day/	IVA .	(Hig/kg/day)	12
I			· Dermal	Arsenic	114	mg/kg	4.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	7.1E-07	3.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Cadmium	1.80	mg/kg	2.5E-10	(mg/kg/day)	NA	(mg/kg/day)		1.7E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0007
				Lead	65.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA.	(mg/kg/day)	0 0007
				Benzo(a)pyrene Equivalents	0.350	mg/kg	6.3E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)	4.6E-08	4.4E-07	(mg/kg/day)	NA.	(mg/kg/day)	
				Aroclor-1260	0.250	mg/kg	4.8E-09	(mg/kg/day)	2.0E+00	(mg/kg/day)	9.7E-09	3.4E-07	(mg/kg/day)	NA NA	1	1
			Exp. Route Total		-i			1 1 3 3 //		(mg/kg/day)	7.7E-07	3.42-07	(mg/kg/day)	INA	(mg/kg/day)	
		Exposure Point Total									8.8E-06					0.1
	Exposure Medium Total										8.8E-06	 				1.3
	Air	UXO 32	Inhalation	Arsenic	8.0E-5	mg/m³	2.6E-07	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	1.1E-06	1.8E-05	1 3 7			1.3
				Cadmium	1.3E-6	mg/m ³	4.1E-09	(mg/m³)	1.8E-03	(ug/m³) ⁻¹	7.4E-09	2.9E-07	(mg/m ³)	1.5E-05	(mg/m³)	1.2
			1	Lead	4.6E-5	mg/m³	1.5E-07	(mg/m³)	NA.	(ug/m ³) ⁻¹	7.46-09	1	(mg/m ³)	1.0E-05	(mg/m³)	0.03
				Benzo(a)pyrene Equivalents	2.4E-7	mg/m ³	8.0E-10	(mg/m³)	1.1E-03	(ug/m ³) ⁻¹	8.8E-10	1.0E-05	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260	1.76-7	mg/m ³	5.7E-10	(mg/m³)	5.7E-04	(ug/m ³) ⁻¹	3.3E-10	5.6E-08	(mg/m ³)	NA	(mg/m³)	
			Exp. Route Total			I iligilii	5.7.2.10	(mg/m)	3.7 2.104	(ug/m)		4.0E-08	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total									1.1E-06					1.2
	Exposure Medium Total										1.1E-06					1.2
. Medium Total		·	· · · · · · · · · · · · · · · · · · ·	Charles and the same		- Aur han					1.1E-06 9.9E-06					1.2
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	-4,1E-12	(mg/kg/day)	1.3E+05	1 / 1 / 1 / 1		2.25.12	Y			2.6
				Arsenic	68.1	mg/kg	3,1E-06	(mg/kg/day) (mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	5.3E-07	2.9E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.3
				Cadmium	69.0	mg/kg	3.2E-06	(mg/kg/day) (mg/kg/day)	NA	(mg/kg/day) ⁻¹	4.7É-06	2.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
				Lead	1,672	mg/kg	7.7E-05	(mg/kg/day) (mg/kg/day)	NA NA	(mg/kg/day)		2.2E-04	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.2
				Mercury	3.30	mg/kg	1.5E-07			(mg/kg/day)''		5.4E-03	(mg/kg/day)	NA	(mg/kg/day)	-
			f	Zinc	3,500	mg/kg	1.6E-04	(mg/kg/day) (mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
		•		Aroclor-1260	8.00	mg/kg	3.7E-07		NA 0.05.05	(mg/kg/day) ⁻¹		1.1E-02	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.04
			Exp. Route Total		0.00	iliging	3.76-07	(mg/kg/day)	2.0E+00	(mg/kg/day)	7.4E-07	2.6E-05	(mg/kg/day)	NA	(mg/kg/day)	
				2,3,7,8-TCOD Equivalents	8.9E-5	mg/kg	3.7E-13	(1	6.0E-06					1.3
			1	Arsenic	68.1			(mg/kg/day)	1.3E+05	(mg/kg/day)	4.8E-08	2.6E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.03
	1			Cadmium	69.0	mg/kg mg/kg	2 8E-07 9.5E-09	(mg/kg/day)	1.5E+00	(mg/kg/day)	4.2E-07	2.0E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0 07
				Lead	1,672		0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.7E-07	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.03
				Mercury		mg/kg		(mg/kg/day)	NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				•	3.30	mg/kg	4.6E-10	(mg/kg/day)	NA	(mg/kg/day)		3 5E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0 002
			i	Zinc Aroclor-1260	3,500	mg/kg	4.8E-07	(mg/kg/day)	NA	(mg/kg/day)		3 4E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0 0001
			Exp. Route Total	Arociur-1260	8.00	mg/kg	1.5E-07	(mg/kg/day)	2 0E+00	(mg/kg/day)	3.1E-07	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total	cxp. Houle Total								7.8E-07					0.1
	Exposure Medium Total	Exposure Point Total									6.8E-06					1,4
	caposure Medium Total	1,100,00	1 11 12 17								6.8E-06					1 4
	DII .	UXO 32		2,3,7,8-TCDD Equivalents	6.2E-11	mg/m³	2.0E-13	(mg/m³)	3.8E+01	(ug/m³}-'	7.7E-09	1.4E-11	(mg/m³)	4.0E-08	(mg/m³)	0 0004
				Arsenic	4.8E+5	mg/m³	1.6E-07	(mg/m ³)	4.3E-03	(ug/m³)-1	6.7E-07	1.1E-05	(mg/m³)	1.5E-05	(mg/m ³)	0.7
				Cadmium	4.8E-5	mg/m³	1.6E-07	(mg/m³)	1.8E-03	(ug/m³) '	2.8E-07	1.1E-05	1 (1.00.00	1 .	1
	1		1	Lead	4.02.5	1 119/111	7.02 07	(ilignii)		(ug/m)	2.00-07	1.15-05	(mg/m ³)	1.0E-05	(mg/m³)	1.1

TABLE 7.7.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

XO 32, INDIAN HEAD, MA PAGE 2 OF 3

Scenario TimeIrame: Current/Future Receptor Population: Construction Worker

Medium	Exposure Medium	Exposure Point	Exposure Rout	e Chemical of		PC										
				Potential Concern	Value	Units	Inteks/Exer-	Ci re Concentration	ancer Risk Calcu			<u> </u>	Non-C	ancer Hazard	Calculations	
					1	Onns				/Unit Risk	Cancer Risk	Intake/Expos	ure Concentration		RfD/RfC	Hazard Quot
				Mercury	1 0 05 0	-	Value	Units	Value	Units		Value	Units	Value	Units	- Indizard Coor
				Zinc	2.3E-6	mg/m³	7.5E-09	(mg/m ³)	NA	(ug/m³) ⁻¹		5.3E-07	(mg/m³)	3.0E-05		
					0.002	mg/m³	8.0E-06	(mg/m³)	NA NA	(ug/m ³) ⁻¹		5.6E-04	(mg/m³)	NA NA	(mg/m³)	0.02
				Aroclor-1260	5.6E-6	mg/m³	1,8E-08	(mg/m³)	5.7E-04	(ug/m³)·1	1.0E-08	1.3E-06	1	1	(mg/m³)	-
			Exp. Route Tota	ıl .				1	<u> </u>	(agriii)	9.7E-07	1.35.08	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total										ļ				1.8
	Exposure Medium Total										9.7E-07	L				1.8
Medium Tolai											9.7E-07					1.8
rface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2.3.7,8-TCDD Equivalents	8.9E-5		<u> </u>				7.7E-06					3.3
			, , , , , , , , , , , , , , , , , , , ,	Arsenic	1	mg/kg	4.1E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	5.3E-07	2.9E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.3
		i	Ì		143	mg/kg	6.6E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)"	9.9E-06	4.6E-04	(mg/kg/day)	3.0E-04	l .	
				Cadmium	13.1	mg/kg	6.0E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.2E-05	1	ĺ	(mg/kg/day)	1.5
				Lead	503	mg/kg	2.3E-05	(mg/kg/day)	NA.	(mg/kg/day)		11	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.04
				Mercury	3.30	mg/kg	1.5E-07	(mg/kg/day)	NA.		1	1 6E-03	(mg/kg/day)	NA	(mg/kg/day)	
		ĺ		Zinc	3,500	mg/kg	1.6E-04	(mg/kg/day)		(mg/kg/day)	• • •	1.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1.7E-08	,	NA	. (mg/kg/day) ⁻¹		1.1E-02	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.04
				Araclor-1260				(mg/kg/day)	7.3E+00	(mg/kg/day)	1.2E-07	1.2E-06	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Route Total		4.40	mg/kg	2.0E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	4.1E-07	1.4E-05	(mg/kg/day)	NA	(mg/kg/day)	
			Dermal Dermal								1.1E-05		1 3 3 11		(Ilig/kg/day)	
			Dermai	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	3.7E-13	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	4.8E-08	2.6E-11	(matter trans)		1	1.9
				Arsenic	143	mg/kg	5.9E-07	(mg/kg/day)	1 5E+00	(mg/kg/day)	8.9E-07	}	(mg/kg/day)	1.0E-09	(mg/kg/day)	0 03
			ĺ	Cadmium	13,1	mg/kg	1 8E-09	(mg/kg/day)	NΑ	1	Į.	4.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.14
				Lead	503	mg/kg	0.0E+00			(mg/kg/day)		1 3E-07	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.01
				Mercury	3.30		li .	(mg/kg/day)	NA NA	(mg/kg/day):1		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Zinc		mg/kg	4.6E-10	(mg/kg/day)	NA NA	(mg/kg/day) ⁻¹		3.2E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.002
					3,500	mg/kg	4.8E-07	(mg/kg/day)	NA	(mg/kg/day)"		3.4E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	
				Benzo(a)pyrene Equivalents	0.360	mg/kg	6.5E-09	(mg/kg/day)	7 3E+00	(mg/kg/day) ⁻¹	4.7E-08	4.5E-07	(mg/kg/day)	NA.	1	0.0001
				Araclar-1260	4.40	mg/kg	8.5E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)	1.7E-07	6.0E-06	1 1		(mg/kg/day)	"
			Exp. Route Total							(-Mg-Mg/503))	1.2E-06	0.0E-06	(mg/kg/day)	NA NA	(mg/kg/day)	
		Exposure Point Total														0.2
	Exposure Medium Total										1.2E-05					2.1
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	6.2E-11	mg/m³	2.0E-13			, <u> </u>	1.2E-05					2.1
	1			Arsenic	1.0E-4			(mg/m³)	3.8E+01	(ug/m ³) ⁻¹	7.7E-09	1.4E-11	(mg/m³)	4.0E-08	(mg/m³)	0.0004
			ļ	Cadmium	1	mg/m³	3.3E-07	(mg/m³)	4.3E-03	(ug/m ³) ⁻¹	1.4E-06	2.3E-05	(mg/m³)	1.5E-05	(mg/m³)	1.5
					9.2E-6	mg/m³	3.0E-08	(mg/m³)	1.8E-03	(ug/m ³) ⁻¹	5.4E-08	2.1E-06	(mg/m³)	1.0E-05		
				Lead	3.5E-4	mg/m³	1.1E-06	(mg/m³)	NA	(ug/m³)·1		8.0E-05	(mg/m³)		(mg/m³)	0.2
	1 1			Mercury	2.3E-6	mg/m³	7.5E-09	(mg/m³)	NA	(ug/m ³)-1		5.3E-07	1	NA	(mg/m³)	
				Zinc	0.002	mg/m³	8.0E-06	(mg/m³)	NA	(ug/m³)	- ,		(mg/m³)	3.0E-05	(mg/m³)	0.02
			1	Benzo(a)pyrene Equivalents	2.5E-7	mg/m ^a	8.2E-10	(mg/m ³)	1.1E-03	1 - 1		5.6E-04	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260	3.1É-6	mg/m ³	1.0E-08	1		(ug/m³)''	9.0E-10	5.7E-08	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total		0.12	mg/m	1.02-08	(mg/m³)	5.7E-04	(ug/m³)''	5.7E-09	7.0E-07	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total						·			1.5E-06					1.7
	Exposure Medium Total										1.5E-06					1 7
Medium Total											1.5E-06					
urface Soil	Subsurface Soil	1170.20	T						-		1.4E-05					1.7
		UXO 32	ingestion	Aluminum	4.820	mg/kg	2 2E-04	(mg/kg/day)	NA	(mg/kg/day)		165.00	/ // · · · · · · · · · · · · · · · ·			3.9
	1			Arsenic	110	mg/kg	5.1E-06	(mg/kg/day)	1.5E+00		- !	1 6E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0 02
				Cobalt	18.9	mg/kg	8.7E-07		- 1	(mg/kg/day) 1	7.6E-06	3.6E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	1.2
				Iron .	9,742			(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.1E-05	(mg/kg/day)	3.0E-03	(mg/kg/day)	0.02
			<u> </u>	Manganese	1	mg/kg	4.5E-04	(mg/kg/day)	NA	(mg/kg/day):1		3.1E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.04
				···anganese	122	mg/kg	5.6E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹					. 5 . 5 . 6 . 6 . 7	0.04
	[]			Vanadium	27.4			((ing/kg/day)	**	3.9E-04	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.02

TABLE 7.7.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32. INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Current/Future Receptor Population: Construction Worker

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Car	cer Risk Calcul	ations			Non-Ca	ncer Hazard C	aloulations	
		İ		Potential Concern	Value	Units	Intake/Exposi	re Concentration	CSF/	Unit Risk	Cancer Risk	Inlake/Exposu	re Concentration		D/RfC	Hazard Quoti
					<u> </u>	<u> </u>	Value	Units	Value	Units		Value	Units	Value	Unils	Hazaro Guoli
		}		Benzo(a)pyrene Equivalents	0.480	mg/kg	2.2E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.6E-07	1.5E-06	(mg/kg/day)	NA	(mg/kg/day)	-
			Exp. Route Total	<u></u>							7.8E-06	i———	1 19 13 11/1		(mg/kg/day)	1.3
			Dermal	Aluminum	4,820	mg/kg	6.7E-07	(mg/kg/day)	NA	(mg/kg/day)		4.7E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00005
				Arsenic	110	mg/kg	4.6E-07	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	6.9E-07	3.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day) (mg/kg/day)	0.00005
			ļ	Cobalt	18.9	mg/kg	2.6E-09	(mg/kg/day)	NA	(mg/kg/day)"		1.8E-07	(mg/kg/day)	3.0E-03	(mg/kg/day) (mg/kg/day)	_
				Iron	9,742	mg/kg	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)		9.4E-05	(mg/kg/day)	7.0E-01		0.00006
				Manganese	122	mg/kg	1.7E-08	(mg/kg/day)	NA	(mg/kg/day)		1.2E-06	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.0001
				Vanadium	27.4	mg/kg	3.8E-09	(mg/kg/day)	NA	(mg/kg/day)		2.75-07	(mg/kg/day)	1.0E-02	(mg/kg/day)	0.001
				Benzo(a)pyrene Equivalents	0.480	mg/kg	8.6E-09	(mg/kg/day)	7.3E+00	(mg/kg/day)	6.3E-08	6.0E-07	(mg/kg/day) (mg/kg/day)	NA	(mg/kg/day)	0.00003
			Exp. Route Total		·		1			(mg/kg/day)	7.5E-07	3.02.07	(Ilig/kgrday)	- IVA	(mg/kg/day)	-
		Exposure Point Total			· · · · · · · · · · · · · · · · · · ·						8.5E-06		·			0.1
	Exposure Medium Total										8.5E-06					1.4
	Air	UXO 32	Inhalation	Aluminum	0.003	mg/m³	1.1E-05	(mg/m³)	NA	(ug/m ³) ⁻¹		7.7E-04	(mg/m³)	5.0E-03	1	1.4
				Arsenic	7.7E-5	mg/m³	2.5E-07	(mg/m³)	4.3E-03	(na/m ₃),	1.1E-06	1.8E-05	(mg/m ⁻)	1.5E-05	(mg/m³)	0.2
			1	Cobalt	1.3E-5	mg/m ³	4.3E-08	(mg/m³)	9.0E-03	(ug/m ³) ⁻¹	3.9E-07	3.0E-06	(mg/m ⁻)	2.0E-05	(mg/m³)	1.2
				Iron	0.007	mg/m ³	2.2E-05	(mg/m³)	NA	(ug/m ³) ⁻¹		1.6E-03	(mg/m²)	2.0E-05 NA	(mg/m³)	0.2
	ĺ			Manganese	8.5E-5	mg/m³	2.8E-07	(mg/m³)	NA	(ug/m³)-1		1.9E-05	1	5.0E-05	(mg/m³)	
				Vanadium	1.9E-5	mg/m²	6.2E-08	(mg/m³)	NA	(ug/m ³)-1		4.4E-06	(mg/m³)		(mg/m ³)	0.4
	}			Benzo(a)pyrene Equivalents	3.4E-7	ma/m³	1.1E-09	(mg/m³)	1.1E-03	(ug/m³)-1	1.2E-09	7.7E-08	(mg/m³)	NA	. (mg/m³)	
			Exp. Route Total					(mg/m)	1.12-00	(ug/in)	1.5E-06	7.7E-08	(mg/m³)	NA	(mg/m³)	· · · · · · · · · · · · · · · · · · ·
		Exposure Point Total			<u> </u>		<u> </u>									1.9
	Exposure Medium Total										1.5E-06					1.9
ledium Total		······································			· · · · · · · · · · · · · · · · · · ·		 				1.5E-06					1,9
				The same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa			<u> </u>				1.0E-05					3.3

TABLE 7.8.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timetrame: Current/Future Receptor Population: Industrial Worker Receptor Age: Adult

H	Exposure Medium	Exposure Point	Exposure Route	Chemical of		EPC										
li .				Potential Concern	Value	Units	Intoke/Euro		ncer Risk Calcur					ancer Hazard (Calculations	
					Value	Units		ire Concentration		Unit Risk	Cancer Risk		ure Concentration	R	ID/RfC	Hazard Quotien
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic ·	114	To a disc	Value	Units	Value	Units		Value	Units	Value	Units	1
			903517	Cadmium		mg/kg	4.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	6.0E-05	1.1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Lead	1.80	mg/kg	6.3E-07	(mg/kg/day)	NA -	(mg/kg/day) ^{*1}		1.8E-08	(mg/kg/day)	1 0E-03	(mg/kg/day)	0.002
				1	65.1	mg/kg	2.3E-05	(mg/kg/day)	NA NA	(mg/kg/day) ⁻¹		6.4E-05	(mg/kg/day)	NA	(mg/kg/day)	
			1	Benzo(a)pyrene Equivalents	0.350	mg/kg	1.2E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	8.9E-07	3 4E-07	(mg/kg/day)	NA	(mg/kg/day)	
}	•		-	Aroclor-1260	0.250	rng/kg	8.7E-08	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.7E-07	2.4E-07	(mg/kg/day)	NΑ	(mg/kg/day)	
i			Exp. Route Total								6.1E-05		<u> </u>		1	0.4
	}		Dermal	Arsenic	114	mg/kg	7.9E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.2E-05	2.2E-05	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.07
				Cadmium	1.80	mg/kg	4.2E-09	(mg/kg/day)	NA	(mg/kg/day)."		1.25-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0 0005
1				Lead	65.1	rng/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA NA	(mg/kg/day)	
	i	1		Benzo(a)pyrene Equivalents	0.350	mg/kg	1.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	7.7E-07	2.9E-07	(mg/kg/day)	NA NA	1	
Î				Aroclor-1260	0.250	mg/kg	8 1E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)	1.6E-07	2.3E-07	1		(mg/kg/day)	}
			Exp. Route Total							(mg/ng/dby)	1.3E-05	2.32.07	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total			***************************************						7.4E-05					0.07
l .	Exposure Medium Total							·			7.4E-05					0.4
	Air	UXO 32	Inhalation	Arsenic	3.5E-8	mg/m³	2.9E-09	(mg/m²)	4.3E-03	131		0.45.06	T		T	0.4
				Cadmium	5.6E-10	mg/m ³	4.5E-11	(mg/m ³)	1.8E-03	(ug/m³) ⁻¹	1.2E-08	8.1E-09	(mg/m ³)	1.5E-05	(mg/m³)	0.0005
ĺ			1	Lead	2.0E-8	mg/m³	1.6E-09	(mg/m ⁻) (mg/m ³)	NA	(ug/m ³) ⁻¹	8.2E-11	1.3E-10	(mg/m³)	1.0E-05	(mg/m³)	0.00001
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m ³	8.8E-12	1		(ug/m³)··	• •	4.6E-09	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260	7.7E-11	mg/m ³	6.3E-12	(mg/m³)	1 1E-03	(ug/m³)-1	9.7E-12	2.5E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total		7.76-11	mg/m*	6.3E-12	(mg/m³)	5.7E-04	(ug/m³)	3.6E-12	1.8E-11	(mg/m³)	NA	(mg/m³)	
	i	Exposure Point Total		I							1.2E-08					0.0005
	Exposure Medium Total										1.2E-08					0.0005
Medium Total		· · · · · · · · · · · · · · · · · · ·									1.2E-08				·	0 0005
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2 2 7 6 7000 5 1 1 1							7.4E-05					0.4
	(2.000.000)	0A0 32	ingestion	2,3,7,8-TCDD Equivalents Arsenic	8.9E-5	mg/kg	3.1E-11	(mg/kg/day)	1.3E+05	(mg/kg/day)	4.0E-06	8.7E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.09
				*****	68.1	mg/kg	2.4È-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	3.6E-05	6 7E-05	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.2
				Cadmium	69.0	mg/kg	2.4E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.8E-05	(mg/kg/day)	4.05.00	1	0.1
					1 :			1 . 3 . 3 //			4.			1.0E-03	[mo/kg/dav]	
				Lead	1,672	mg/kg	5.8E-04	(mg/kg/day)	NA	(mg/kg/day)		1.6E-03			(mg/kg/day) (mg/kg/day)	
				Mercury	1,672 3.30	mg/kg mg/kg	5.8E-04 1.2E-06	1	NA NA	1	ìi		(mg/kg/day)	NA	(mg/kg/day)	
i i								(mg/kg/day)		(mg/kg/day) (mg/kg/day)		1.6E-03 3.2E-06	(mg/kg/day) (mg/kg/day)	NA 3 0E-04	(mg/kg/day) (mg/kg/day)	0.01
				Mercury	3.30	mg/kg	1.2E-06	(mg/kg/day) (mg/kg/day)	NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹		1.6E-03 3.2E-06 3.4E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0É-01	(mg/kg/day) (mg/kg/day) (mg/kg/day)	
				Mercury Zinc Aroclor-1260	3.30 3,500	mg/kg mg/kg	1.2E-06 1.2E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA	(mg/kg/day) (mg/kg/day)		1.6E-03 3.2E-06	(mg/kg/day) (mg/kg/day)	NA 3 0E-04	(mg/kg/day) (mg/kg/day)	0.01 0.01
				Mercury Zinc	3.30 3,500	mg/kg mg/kg	1.2E-06 1.2E-03	(mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	5.6E-06 4.5E-05	1.6E-03 3.2E-06 3.4E-03 7.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01
			Exp. Route Total	Mercury Zinc Aroclor-1260	3,500 8,00	mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	5.6E-06 4.5E-05 8.0E-07	1.6E-03 3.2E-06 3.4E-03 7.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4
			Exp. Route Total	Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents	3.30 3,500 8.00	mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00	{mg/kg/day}" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)"	5.6E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04
			Exp. Route Total	Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents Arsenic	3,30 3,500 8,00 8,9E-5 68,1	mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA	{mg/kg/day}' (mg/kg/day)'' (mg/kg/day)'' (mg/kg/day)'' (mg/kg/day)'' (mg/kg/day)'' (mg/kg/day)''	5.6E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01
			Exp. Route Total	Mercury Zinc Aroclor-1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium	3.30 3.500 8.00 8.9E-5 68.1 69.0	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.6E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04
			Exp. Route Total	Mercury Zinc Aroclor-1260 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead	3.30 3,500 8.00 8.9E-5 68.1 69.0 1,672 3.30	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA	(mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)"	5.6E-06 4.5E-05 6.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04 0.02
			Exp. Route Total	Mercury Zinc Aroclor 1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.6E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04 0.02
			Exp. Roule Total Dermal	Mercury Zinc Aroclor 1260 2.3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury	3.30 3,500 8.00 8.9E-5 68.1 69.0 1,672 3.30	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA	(mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)" (mg/kg/day)"	5.6E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	 0.01 0.01 0.4 0.02 0.04 0.02
		Exposure Point Total	Exp. Route Total	Mercury Zinc Aroclor 1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.8E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.02 0.04 0.02 0.04
	Exposure Medium Total	Exposure Point Total	Exp. Roule Total Dermal	Mercury Zinc Aroclor 1260 2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc	3.30 3.500 8.00 8.9E-5 68.1 69.0 1.672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.6E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	 0.01 0.01 0.4 0.02 0.04 0.02 0.001
	Exposure Medium Total		Exp. Route Total Dermal	Mercury Zinc Aroclor 1260 2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	3,30 3,500 8,00 8,90 8,9E-5 68,1 69,0 1,672 3,30 3,500 8,00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06 2.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.8E-06 4.5E-05 8.0E-07 7.1E-06	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008 0.000
	Exposure Medium Total	Exposure Point Total UXO 32	Exp. Route Total Dermal Exp. Route Total	Mercury Zinc Aroclor-1260 2.3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	3,30 3,500 8,00 8,00 8,9E-5 68,1 69,0 1,672 3,30 3,500 8,00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06 2.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.6E-06 4 5E-05 6.0E-07 7 1E-06 5.2E-06 1.3E-05 5.8E-05	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3.0E-01 NA 1.0E-09 3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008 0.08 0.5
	Exposure Medium Total		Exp. Route Total Dermal Exp. Route Total	Mercury Zinc Aroclor-1260 2.3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260 2.3,7,8-TCDD Equivalents Arsenic	3,30 3,500 8,00 8,90 8,9E-5 68,1 69,0 1,672 3,30 3,500 8,00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06 2.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.8E-05 5.8E-05 6.0E-07 7.1E-06 5.2E-06 1.3E-05 5.8E-05 5.8E-05	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05 7.2E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3 0E-01 NA 1.0E-09 3 0E-04 2 5E-05 NA 2 1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008 0.08 0.5 0.5 0.0000002
	Exposure Medium Total		Exp. Route Total Dermal Exp. Route Total	Mercury Zinc Aroclor-1260 2.3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc Aroclor-1260	3,30 3,500 8,00 8,00 8,9E-5 68,1 69,0 1,672 3,30 3,500 8,00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	1.2E-06 1.2E-03 2.8E-06 6.2E-12 4.7E-06 1.6E-07 0.0E+00 7.6E-09 8.1E-06 2.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA NA 2.0E+00 1.3E+05 1.SE+00 NA NA NA NA 2.0E+00	(mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)* (mg/kg/day)*	5.6E-06 4.5E-05 8.0E-07 7.1E-06 5.2E-06 1.3E-05 5.8E-05 5.6E-05 8.5E-11	1.6E-03 3.2E-06 3.4E-03 7.8E-06 1.7E-11 1.3E-05 4.5E-07 0.0E+00 2.1E-08 2.3E-05 7.2E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	NA 3 0E-04 3 0E-01 NA 1 0E-09 3 0E-04 2 5E-05 NA 2 1E-05 3 0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.01 0.01 0.4 0.02 0.04 0.02 0.001 0.00008 0.08 0.5

TABLE 7.8.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

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Scenario Timeframe; Current/Future Receptor Population: Industrial Worker

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Car	cer Risk Calcula	ations		T T	Non-Ca	ncer Hazard C	Calculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/	Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RIC	Hazard Quotie
							Value	Units	Value	Units	1	Value	Units	Value	Units	-
				Mercury	1.0E-9	mg/m³	8.3E-11	(mg/m³)	NA	(ug/m ³) ⁻¹		2.3E-10	(mg/m ³)	3.0E-05	(mg/m ³)	0.000008
				Zinc .	1.1E-6	mg/m ³	8.8E-08	(mg/m ³)	NA NA	(ug/m³)·1		2.5E-07	(mg/m³)	NA.	(mg/m ³)	0.00000
				Aroclor-1260	2.5E-9	mg/m ³	2.0E-10	(mg/m³)	5.7E-04	(ug/m³)·1	1.2E-10	5.7E-10	(mg/m³)	NA.	(mg/m ³)	
			Exp. Route Total				ļ	1		1 (49)	1.1E-08	1	1. (1119/111)		(mg/m)	0.0008
		Exposure Point Total									1.1E-08	·				0.0008
	Exposure Medium Total	<u>'</u>			·		} 				1.1E-08					
Medium Total												ļ				0.0008
urface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	3.1E-11	1 (11 - (1 - 1)	1.3E+05	1	5.8E-05	\ 			Ţ	0.5
, , , , , , , , , , , , , , , , , , , ,	, , , , , , , , , , , , , , , , , , , ,		ingestion	Arsenic	143			(mg/kg/day)		(mg/kg/day) ⁻¹	4.0E-06	8.7E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.09
				Cadmium		mg/kg	5.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	7.5E-05	1.4E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.5
					13.1	mg/kg	4.6E-06	(mg/kg/day)	NA	(mg/kg/day)		1.3E-05	(mg/kg/day)	1 0E-03	(mg/kg/day)	0.01
				Lead	503	mg/kg	1.8E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.9E-04	(mg/kg/day)	NA	(mg/kg/day)	
	'		1	Mercury	3.30	mg/kg	1.2E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		3.2E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Zinc	3,500	mg/kg	1.2E-03	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		3.4E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.01
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1.3E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	9.2E-07	3.5E-07	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	1.5E-06	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	3.1E-06	4.3E-06	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Route Total			,					8 3E-05					0.6
			Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	6.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)	8.0E-07	1.7E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
				Arsenic	143	mg/kg	9.9E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.5E-05	2.8E-05	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.09
				Cadmium	13.1	mg/kg	3.0E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		8 5E-08	(mg/kg/day)	2 5E-05	(mg/kg/day)	0.00
				Lead	503	rng/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	7.6E-09	(mg/kg/day)	NA	(mg/kg/day)		2 1E-08	(mg/kg/day)	2 1E-05	(mg/kg/day)	0.001
				Zinc	3,500	mg/kg	8.1E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2 3E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.00008
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	7.9E-07	3.0E-07	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	1.4E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	2.8E-06	4.0E-06	(mg/kg/day)	NA	(mg/kg/day)	1
	İ		Exp. Route Total		·					(g.,g.ss))	1.9E-05		(9.49.40)/		(mg/kg/ddy)	0.11
		Exposure Point Total								********	1.0E-04					0.7
	Exposure Medium Total		· · · · · · · · · · · · · · · · · · ·		*···						1.0E-04					0.7
	Air	UXO 32	inhalation	2,3,7,8-TCDD Equivalents	2.8E-14	mg/m³	2.2E-15	(mg/m³)	3.8E+01	(ug/m³)·1	8.5E-11	6.3E-15	(mg/m³)	4.0E-08	(mg/m³)	0.0000002
				Arsenic	4.4E-8	mg/m³	3.6E-09	(mg/m ³)	4.3E-03	(ug/m ³) ⁻¹	1.6E-08	1.0E-08	(mg/m³)	1.5E-05	(mg/m³)	0.0007
	Į.			Cadmium	4.1£-9	mg/m³	3.3E-10	(mg/m³)	1.8E-03	(ug/m³)''	6.0E-10	9.3E-10	1		1	
				Lead	1.6E-7	mg/m ³	1.3E-08	1 1	NA	1 -	B,0E-10		(mg/m³)	1.0E-05	(mg/m³)	0.00009
			1	Mercury	1.0E-9		8.3E-11	(mg/m ³)	NA NA	(ug/m ³)''		3 6E-08	(mg/m ³)	NA .	(mg/m³)	-
				Zinc	1.1E-6	mg/m ³	8.8E-08	(mg/m³)		(ug/m³) '		2.3É-10	(mg/m³)	3.0E-05	(mg/m³)	0 000008
					1	mg/m³		(mg/m³)	NA _	(ug/m³) ⁻¹		2.5E-07 .	(mg/m ³)	NA	(mg/m ³)	
				Benzo(a)pyrene Equivalents Aroclor-1260	1.1E-10	mg/m³	9.1E-12	(mg/m³)	1.1E-03	(ug/m³) ⁻¹	1.0E-11	2.5E-11	(mg/m³)	NA	(mg/m³)	
				Arocior-1260	1.4E-9	mg/m³	1.1E-10	(mg/m ³)	5.7E-04	(ug/m³)-1	6.3E-11	3.1E-10	(mg/m³)	NA .	(mg/m³)	
			Exp. Route Total								1.6E-08					0.0008
		Exposure Point Total									1.6E-08					0.0008
M L T . I	Exposure Medium Total										1.6E-08					0.0008
Medium Total			7	1.							1.0E-04					0.7
ubsurface Soil	Subsurface Soil	UXO 32	Ingestion	Aluminum	4,820	mg/kg	1.7E-03	(mg/kg/day)	NA	(mg/kg/day) ⁻¹	- •	4.7E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.005
			ì	Arsenic	110	mg/kg	3.8E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	5.8E-05	1 1E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0 4
			{	Cobalt	18.9	mg/kg	6.6E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
			ì	(ron	9,742	mg/kg	3.4E-03	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		9.5E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.01
						1		1		1		II .	1 "			1
				Manganese	122	mg/kg	4.3E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.2E-04	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.005

TABLE 7.8.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	EPC	T	Car	cer Aisk Calcul	alione		T				
				Potential Concern	Value	Units	Intake/Exposu	re Concentration		Unit Risk	Cancer Risk	Intoko/Euroau		ncer Hazard C		· · · · · · · · · · · · · · · · · · ·
					,		Value	Units	Value	Units	Cancer Hisk	Value	re Concentration		D/RIC	Hazard Quolie
				Benzo(a)pyrene Equivalents	0.480	mg/kg	1.7E-07	(mg/kg/day)	7.3E+00		125.00		Units	Value	Units	
	i		Exp. Route Total					(mgringrouy)	7.02700	(mg/kg/day)	1.2E-06	4.7E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Dermal	Aluminum	4,820	mg/kg	1.1E-05	(mg/kg/day)	NA	/m=distantil	5.9E-05	{	,			0.4
				Arsenic	110	mg/kg	7.6E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)		3.1E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00003
			ļ	Cobalt	18.9	mg/kg	4.4E-08	(mg/kg/day)	NA NA	(mg/kg/day) ⁻¹	1.1E-05	2.1E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
			ŀ	Iron	9,742	ma/ka	2.2E-05	(mg/kg/day)	NA.	(mg/kg/day)		1.2E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0004
				Manganese	122	ma/ka	2.8E-07	(mg/kg/day)	NA NA	(mg/kg/day)		6.3E-05	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.00009
	ŀ		1	Vanadium	27.4	mg/kg	6.3E-08	(mg/kg/day)	NA NA	(mg/kg/day)		7.9E-07	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.0008
				Benzo(a)pyréne Equivalents	0.480	mg/kg	1.4E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹		1.8E-07	(mg/kg/day)	5.0E-03	(mg/kg/day)	0.00004
			Exp. Route Total			g.n.g	1.42-01	(mg/kg/day)	7.3E+00	(mg/kg/day) 1	1.1E-06	4.0E-07	(mg/kg/day)	NA	(mg/kg/day)	
		Exposure Point Total					 				1.2E-05					0.07
	Exposure Medium Total	· · · · · · · · · · · · · · · · · · ·			·						7.1E-05					0.5
	Air	UXO 32	Inhalation	Aluminum	1.5E-6	mg/m³	1.2E-07	1	~	~~~·	7.1E-05					0.5
			J	Arsenic	3.4E-8	mg/m ³	2.8E-09	(mg/m³)	NA	(ug/m ³) ⁻¹		3.4E-07	(mg/m³)	5.0E-03	(mg/m³)	0.00007
				Cobalt	5.9E-9	mg/m³	4.8E-10	(mg/m³)	4 3E-03	(ug/m³)·1	1.2E-08	7.8E-09	(mg/m³)	1.5E-05	(mg/m³)	0 0005
			1	Iron	3.0E-6	mg/m³	,	(mg/m³)	9.0E-03	(ug/m ³) ⁻¹	4.3E-09	1.3E-09	(mg/m³)	6.0E-06	(mg/m³)	0.0002
			1	Manganese	3.8E-8		2.5E-07	(mg/m ³)	NA	(ug/m ³) ⁻¹		6.9E-07	(mg/m³)	NA	(mg/m³)	
			1	Vanadium	8.5E-9	mg/m ³	3.1E-09	(mg/m³)	NA	(ug/m³) ⁻¹		8.6E-09	(mg/m³)	5.0E-05	(mg/m³)	0.0002
			i l	Benzo(a)pyrene Equivalents	1.5E-10	rng/m³	6.9E-10	(mg/m ²)	NA	(ug/m ³) ⁻¹		1.9E-09	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total	conzola/pyrene Equivalents	1.52-10	mg/m³	1.2E-11	(mg/m³)	1.1E-03	(ug/m ³) ⁻¹	1.3E-11	3.4E-11	(mg/m³)	NA	(mg/m ³)	
		Exposure Point Total	Exp. Hodie Total								1.6E-08					0.0010
	Exposure Medium Total			······································							1.6E-08					0.0010
Medium Total		· · · · · · · · · · · · · · · · · · ·									1.6E-08					0.0010
							1				7.1E-05					0.5

TABLE 7.9 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	F	PC	1	Cal	ncer Risk Calcula	ations		1	Non Co	ncer Hazard C	ala dationa	·
	' '			Potential Concern	Value	Units	Intake/Exposu	re Concentration		Unit Risk	Cancer Risk	intako/Evaceu	re Concentration		D/RIC	Y
				1			Value	Units	Value	Units	Cancer Hisk	Value	Units	Value	Units	Hazard Quotient
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	1.9E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	2.8E-05	2.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
				Cadmium	1.80	mg/kg	2.9E-07	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		3.4E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.003
				Lead	65.1	mg/kg	1.1E-05	(mg/kg/day)	NA NA	(mg/kg/day)		1.2E-04	(mg/kg/day)	NA NA	(mg/kg/day)	0.003
				Benzo(a)pyrene Equivalents	0.350	mg/kg	3.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	2.2E-06	6.6E-07	(mg/kg/day)	NA.	(mg/kg/day)	
				Aroctor-1260	0.250	mg/kg	4.1E-08	(mg/kg/day)	2.0E+00	(mg/kg/day)	8.1E-08	4.7E-07	(mg/kg/day)	NA	(mg/kg/day)	
	1		Exp. Route Total		1			1	L	1 (99, 44)	3.0E-05		19.19.22//		(gragrady)	0.7
			Dermal	Arsenic	114	mg/kg	1.6E-06	(mg'kg/day)	1.5E+00	(mg/kg/day)	2.3E-06	1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
			1	Cadmium	1.80	mg/kg	8.2E-10	(mg/kg/day)	NA NA	(mg/kg/day)		9 6E-09	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0004
				Lead	65.1	mg/kg	0.0E+00	(mg'kg/day)	NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Benzo(a)pyrene Equivalents	0.350	mg/kg	1.1E-07	(mgfkg/day)	7.3E+00	(mg/kg/day) ⁻¹	8.1E-07	2.4E-07	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	0.250	mg/kg	1.6E-08	(mg'kg/day)	2.0E+00	(mg/kg/day)	3.2E-08	1.9E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total								3.2E-06	1		···	1 . 3 . 3 . 17	0.06
		Exposure Point Total									3.3E-05					0.8
1	Exposure Medium Total							*************			3.3E-05					0.8
	Air	UXO 32	Inhalation	Arsenic	3.5E-8	mg/m³	7.2E-11	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	3.1E-10	8.4E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00006
				Cadmium	5.6E-10	mg/m³	1.1E-12	(mg/m³)	1.85-03	(ug/m ³) ⁻¹	2.0E-12	1.3E-11	(mg/m³)	1.0E-05	(mg/m³)	0.000001
Į	i			Lead	2.0E-8	mg/m ³	4.1E-11	(mg/m³)	NA NA	(ug/m³) ⁻¹		4.BE-10	(mg/m³)	NA	(mg/m³)	
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m³	1.2E-12	(mg/m³)	1.1E-03	(ug/m ⁰) ⁻¹	1.3E-12	2.6E-12	(mg/m³)	NA	(mg/m ³)	
(Aroclor-1260	7.7E-11	mg/m³	1.6E-13	(mg/m³)	5.7E-04	(ug/m ³) ⁻¹	9.0E-14	1.8E-12	(mg/m³)	NA	(mg/m³)	
i	}		Exp. Route Total								3.1E-10					0.00006
į.		Exposure Point Total									3.1E-10					0.00006
	Exposure Medium Total										3.1E-10					0.00006
Medium Total	7										3.3E-05					0.8
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	1.48-11	(mg.'kg/day)	1.3E+05	(mg/kg/day)	1.9E-06	1.7E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.2
			1	Arsenic	68.1	mg/kg	1.1E-05	(mg.'kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.7E-05	1.3E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
			1	Cadmium	69.0	mg/kg	1.1E-05	(mg.'kg/day)	NA	(mg/kg/day) ⁻¹		1.3E-04	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.1
				Lead	1,672	mg/kg	2.7E-04	(mg.'kg/day)	NA	(mg/kg/day)		3.2E-03	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	5.4E-07	(mg.'kg/day)	NA	(mg/kg/day)		6.3E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
				Zinc	3,500	mg/kg	5.7E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.6E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.02
		'	Exp. Route Total	Arocior-1260	8.00	mg/kg	1.3E-06	(mg.'kg/day)	2.0E+00	(mg/kg/day) '	2.6E-06	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)	
	1		Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	malka	1.25.12	(malleate 3	1.25.05	T	2.1E-05		T		1	0.8
			Cerman	Arsenic	68.1	mg/kg	1.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)	1.6E-07	1.4E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
			+	Cadmium	69.0	mg/kg mg/kg	9.3E-07 3.1E-08	(mg/kg/day)	1.5E+00 NA	(mg/kg/day) ⁻¹	1.4E-06	1.1E-05 3.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.04
				Lead	1,672	mg/kg	0.0E+00	(mg/kg/day)	NA NA	(mg/kg/day) ⁻¹			(mg/kg/day)	2.5E-05	(mg/kg/day)	0.01
				Mercury	3.30	mg/kg	1.5E-09	(mg.'kg/day) (mg.'kg/day)	NA NA	(mg/kg/day) ⁻¹		0.0E+00 1.8E-08	(mg/kg/day)	NA 0.15.05	(mg/kg/day)	
				Zinc	3,500	mg/kg	1.6E-09	(mg.kg/day) (mg.kg/day)	NA NA	(mg/kg/day)			(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0008
				Aroclor-1260	8.00	mg/kg	5.1E-07	(mg/kg/day) (mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.0E-06	1.9E-05	(mg/kg/day)	3 0E-01	(mg/kg/day)	. 0.00006
			Exp. Route Total		1 0.00	Ingrity	3.16-07	(mg/kg/udy)	2.00+00	(mg/kg/day) ⁻¹	1.0E-06 2.6E-06	6 0E-06	(mg/kg/day)	NA	(mg/kg/day)	<u> </u>
		Exposure Point Total	Cap. Floore Folds	<u> </u>							2.6E-06 2.4E-05					0.07
	Exposure Medium Total	2.postre / orni rotar										ļ				0.8
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	2.8E-14	ma/m³	5.6E-17	/ 3\	3.8E+01	1	2.4E-05	6 5 F 10		105.05	1 1.	0.8
		0.0002	·	Arsenic	2.1E-8	mg/m³	4.3E-11	(mg/m³)	3.8E+01 4.3E-03	(ug/m ³) ⁻¹	2.1E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
				Cadmium	2.1E-8 2.1E-8	mg/m³	4.3E-11 4.3E-11	(mg/m³)		(ug/m³)·1	1.8E-10	5.0E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00003
				Lead	5.2E-7	mg/m²	4.3E-11 1.1E-09	(mg/m³)	1.8E-03 NA	(ug/m³) ⁻¹	7.8E-11	5.1E-10	(mg/m³)	1.0E-05	(mg/m³)	0.00005
II	1	l	1	1	1 3.25-7	Luig/m-	1 12-09	(mg/m³)	l NA	(ug/m ³) ⁻¹		1.2E-08	(mg/m³)	NA	(mg/m³)	

TABLE 7.9 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future Receptor Population: Recreational User Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern		EPC	ļ		ncer Risk Calcul	ations			Non-Ca	ncer Hazard	Calculations	<u> </u>
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/	Unit Risk	Cancer Risk	Intake/Expos	ure Concentration		I/D/RIC	Hazard Queti
· · · · · · · · · · · · · · · · · · ·							Value	Units	Value	Units	1	Value	Units	Value	Units	- Hazaro Ciuoi
		1		Mercury	1.0E-9	mg/m³	2.1E-12	(mg/m³)	NA	(ug/m³) ⁻¹		2.4E-11	(mg/m³)	3.0E-05	(mg/m³)	0.000000
				Zinc	1.15-6	mg/m³	2.2E-09	(mg/m³)	NA NA	(ug/m³) 1		2.6E-08	(mg/m³)	NA.	(mg/m³)	0.000000
				Arocior-1260	2.5E-9	mg/m³	5.0E-12	(mg/m³)	5.7E-04	(ug/m³)·1	2.9E-12	5.9E-11	(mg/m³)	NA NA	(mg/m³)	
			Exp. Roule Total								2.7E-10	i — —			(mg/m)	0.00008
		Exposure Point Total							***		2.7E-10					0.00008
	Exposure Medium Total	· · · · · · · · · · · · · · · · · · ·					1			·	2.7E-10					0.00008
Medium Total	· · · · · · · · · · · · · · · · · · ·										2.4E-05					
urface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	1.4E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.9E-06	1.7E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.8
				Arsenic	143	mg/kg	2.3E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	3.5E-05	2.7E-04	(mg/kg/day)	3.0E-04		0.2
				Cadmium	13.1	mg/kg	2.1E-06	(mg/kg/day)	NA.	(mg/kg/day)		2.5E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.9
				Lead	503	mg/kg	8.2E-05	(mg/kg/day)	NA	(mg/kg/day)		9.6E-04	(mg/kg/day)		(mg/kg/day)	0.02
		<u> </u>		Mercury	3,30	mg/kg	5.4E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.3E-06	1	NA	(mg/kg/day)	
				Zinc	3,500	mg/kg	5.7E-04	(mg/kg/day)	NA.	(mg/kg/day)		H	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
			ł	Benzo(a)pyrene Equivalents	0.360	mg/kg	3.1E-07	(mg/kg/day)	7.3E+00			6.6E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.02
		}		Arocior-1260	4.40	mg/kg	7.2E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	2.3E-06	6.8E-07	(mg/kg/day)	NA NA	(mg/kg/day)	
			Exp. Floute Total			199	1.22-01	(mg/kg/day)	2.00+00	(mg/kg/day) 1	1.4E-06	8.4E-06	(mg/kg/day)	NA .	(rng/kg/day)	
			Dermal	2,3.7,8-TCDD Equivalents	8.9E-5	mg/kg	1.2E-12	(mg/kg/day)	1.3E+05	1	4.1E-05		· · · · · · · ·		,	1.1
				Arsenic	143	mg/kg	2.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.6E-07	1.4E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
		1		Cadmium	13.1	mg/kg	6.0E-09	(mg/kg/day)	NA	(mg/kg/day)	2.9E-06	2.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.08
				Lead	503	mg/kg	0.0E+00	1		(mg/kg/day)"		7.0E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0 00
			1	Mercury	3.30			(mg/kg/day)	NA	(mg/kg/day) ⁻		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
		ļ		Zinc	3,500	mg/kg	1.5E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1 8E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0 0008
				Benzo(a)pyrene Equivalents		mg/kg	1.6E-06	(mg/kg/day)	"NA	(mg/kg/day) ⁻¹		1.9E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.00006
				Aroclor-1260	0.360	mg/kg	1.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	8.3E-07	2.5E-07	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	AIOCIOI-1280	4.40	mg/kg	2.8E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) 1	5.6E-07	3.3E-06	(mg/kg/day)	NA	(mg/kg/day)	L
		Exposure Point Total	Exp. Houte Total								4 5E-06					0.09
	Exposure Medium Total	Exposure 7 on a fotal									4.5E-05					1.2
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	T						4.5E-05					1.2
		0,0 32	1		2.8E-14	mg/m ³	5.6E-17	(mg/m³)	3.8E+01	(ug/m³)·1	2.1E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
			1	Arsenic	4.4E-8	mg/m³	9.0E-11	(mg/m³)	4.3E-03	(ug/m ³) ⁻¹	3.9E-10	1.1E-09	(mg/m³)	1.5E-05	(mg/m³)	0.00007
			1	Cadmium	4.1E-9	rng/m³	8.3E-12	(mg/m³)	1.8E-03	(ug/m³) ⁻¹	1.5E-11	9.6E-11	(mg/m³)	1.0E-05	(mg/m³)	0.000010
				Lead	1.6E-7	mg/m ³	3.2E-10	(mg/m ³)	NA	(ug/m ³)-1		3.7E-09	(mg/m³)	NA	(mg/m³)	
	ŧ			Mercury	1.0E-9	mg/m³	2.1E-12	(mg/m³)	NA	(ug/m ³) ⁻¹		2.4E-11	(mg/m³)	3.0E-05	(mg/m³)	0.0000008
	[[Zinc	1 1E-6	mg/m³	2.2E-09	(mg/m³)	NA	(ug/m ³) ⁻¹		2.6E-08	(mg/m³)	NA	(mg/m ³)	
			i	Benzo(a)pyrene Equivalents	1.1E-10	mg/m³	1.2E-12	(mg/m³)	1.1E-03	(ug/m ³) ⁻¹	1.3E-12	2.6E-12	(mg/m ³)	NA	(mg/m³)	
				Arocior-1260	1.4E-9	rng/m ³	2.8E-12	(mg/m³)	5.7E-04	(ug/m³) ⁻¹	1.6E-12	3.2E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Roule Total								4.1E-10		1,		1 1 3 1 7	0.00008
		Exposure Point Total									4.1E-10				·	0.00008
Marillana Park	Exposure Medium Total										4.1E-10		· · · · · · · · · · · · · · · · · · ·		24	0.00008
Medium Total											4.5E-05					1.2
bsurface Soil	Subsurface Soil	UXO 32	Ingestion	Aluminum	4,820	mg/kg	7.8E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		9.2E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.009
				Arsenic	110	mg/kg	1.8E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	2.7E-05	2.1E-04	(mg/kg/day)	3.0E-04		0.009
				Cobalt	18.9	rng/kg	3.1E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹	2.7.2-03	3.6E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	ł
	[[Iron	9,742	mg/kg	1.6E-03	(mg/kg/day)	NA	(mg/kg/day)		1.9E-02	(mg/kg/day) (mg/kg/day)		(mg/kg/day)	0.1
				Manganese	122	mg/kg	2.0E-05	(mg/kg/day)	NA	(mg/kg/day)		2.3E-04	(mg/kg/day)	7.0E-01 2.4E-02	(mg/kg/day) (mg/kg/day)	0.03

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TABLE 7.9.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timetrame: Future

Medium Total

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	Er	PC		Can	cer Risk Calcula	utions	,	1	Non-Ca	ncer Hazard Ca	alculations	
		1		Potential Concern	Value	Units	Intake/Exposur	re Concentration	CSF/L	Unit Risk	Cancer Risk	Intake/Exposu	re Concentration	Į RII	D/RIC	Hazard Quotient
		<u>!</u>					Value	Units	Value	Units		Value	Units	Value	Units	1 !
				Benzo(a)pyrene Equivalents	0.480	mg/kg	4.2E-07	(mg/kg/cay)	7.3E+00	(mg/kg/day) ⁻¹	3.0E-06	9.1E-07	(mg/kg/day)	NA	(mg/kg/day)	<u> </u>
		1	Exp. Route Total								3.0E-05					0.9
		1	Dermal	Aluminum	4,820	mg/kg	2.2E-06	(mg/kg/cay)	NA	(mg/kg/day) ⁻¹		2.6E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00003
		1		Arsenic	110	mg/kg	1.5E-06	(mg/kg/gay)	1.5E+00	(mg/kg/day) ⁻¹	2.3E-06	1.8E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
		1		Cobalt	18.9	mg/kg	8.6E-09	(mg/kg/cay)	NA	(mg/kg/day) ⁻¹		1 0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.0003
		1		Iron	9.742	mg/kg	4.4E-06	(mg/kg/cay)	NA	(mg/kg/day) ⁻¹		5.2E-05	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.00007
	1	1	Į.	Manganese	122	rng/kg	5.6E-08	(mg/kg/cay)	NA	(mg/kg/day) ⁻¹		6.5E-07	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.0007
	1	1		Vanadium	27.4	mg/kg	1.2E-08	(mg/kg/cay)	NA	(mg/kg/day) ⁻¹		1.5E-07	(mg/kg/day)	5 0E-03	(mg/kg/day)	0.00003
		1	L	Benzo(a)pyrene Equivalents	0.480	mg/kg	1.5E-07	(mg/kg/cay)	7.3E+00	(mg/kg/day)	1.1E-06	3.3E-07	(mg/kg/day)	NA	(mg/kg/day)	
		L	Exp. Route Total								3.4E-06	1				0.06
		Exposure Point Total									3.3E-05					0.9
	Exposure Medium Total										3.3E-05				Street where to	0.9
	Air	UXO 32		Aluminum	1.5E-6	mg/m³	3.0E-09	(mg/m³)	NA	(ug/m³) ⁻¹		3.5E-08	(mg/m³)	5.0E-03	(mg/m³)	0.000007
		1		Arsenic	3.4E-8	mg/m ³	6.9E-11	(mg/m³)	4.3E-03	(ug/m ³) ⁻¹	3.0E-10	8.1E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00005
		1		Cobalt	5.9E-9	mg/m³.	1.2E-11	(mg/m³)	9.0E-03	(ug/m³)-1	1.1E-10	1.4E-10	(mg/m³)	6.0E-06	(mg/m ³)	0.00002
	1	1		Iron	3.0E-6	mg/m³	6.1E-09	(mg/m³)	NA	(ug/m³) ⁻¹		7.2E-08	(mg/m³)	NA	(mg/m³)	
	1	1		Manganese	3.8E-8	mg/m³	7.7E-11	(mg/m³)	NA	(ug/m ^a)-1		9.0E-10	(mg/ m ³)	5.0E-05	(mg/m³)	0.00002
	1	1		Vanadium	8.5E-9	mg/m³	1.7E-11	(mg/m³)	NA	(ug/m ³)-1		2.0E-10	(mg/m³)	NA	(mg/m³)	**
		1		Benzo(a)pyrene Equivalents	1.5E-10	mg/m³	1.6E-12	(mg/m³)	1.1E-03	(ug/m³)-1	1.8E-12	3.5E-12	(mg/m³)	NA	(mg/m³)	
	1		Exp. Route Total							*	4.1E-10				•	0.0001
		Exposure Point Total	2					4.—			4.1E-10					0.0001
	Exposure Medium Total			7.70		~~~~			4-1-4 - 4	***************************************	4.1F-10	1			r:	0,0001

3.3E-05

0.9

TABLE 7.10.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32. INDIAN HEAD, MARYLAND

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Scenario Timeframe: Future Receptor Population: Recreational User Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	8	PC		Can	cer Risk Calcul	ations			Non-C=	ncer Hazard C	alculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration		Unit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RfC	Hazard Quotien
						1	Value	Units	Value	Units	1	Value	Units	Value	Units	Hazard Guorien
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	8.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.2E-05	2.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.08
			-	Cadmium	1.80	mg/kg	1.3E-07	(mg/kg/day)	NA	(mg/kg/day)		3.7E-07	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.0004
				Lead	65.1	mg/kg	4.5E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.3E-05	(mg/kg/day)	NA	(mg/kg/day)	
				Benzo(a)pyrene Equivalents	0.350	mg/kg	4.5E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	3.3E-07	7.1E-08	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclar-1260	0.250	mg/kg	1.7E-08	(mg/kg/day)	2.0E+00	(mg/kg/day).1	3.5E-08	5.1E-08	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total							1 (33)/	1.2E-05		(gg.cu)/		(mg/kg/day)	0.08
			Dermal	Arsenic	114	mg/kg	9.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.4E-06	2.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
				Cadmium	1.80	mg/kg	5.0E-10	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.5E-09	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.00006
	ľ			Lead	65.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	0.00006
				Benzo(a)pyrene Equivalents	0.350	mg/kg	2.3E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.7E-07	3.7E-08	(mg/kg/day)	NA NA	(mg/kg/day) (mg/kg/day)	
			}	Aroclor-1260	0.250	mg/kg	9.7E-09	(mg/kg/day)	2.0€+00	(mg/kg/day)	1.9E-08	2.8E-08	(mg/kg/day)	NA.		
			Exp. Route Total					1		(mgrkg/day)	1.6E-06	2.02.00	(mg/kg/day)	174	(mg/kg/day)	
	1	Exposure Point Total		The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s							1.4E-05					0.009
	Exposure Medium Total		- 20-,								1.4E-05					0.09
	Air	UXO 32	Inhalation	Arsenic	3.5E-8	mg/m ³	2.9E-10	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	1.4E-05	8.4E-10	/3	1.5E-05	/ 3.	0.09
				Cadmium	5.6E-10	mg/m ³	4.5E-12	(mg/m³)	1.8E-03	(ug/m ³) ⁻¹	8.2E-12	1.3E-11	(mg/m³)		(mg/m³)	0.00006
				Lead	2.0E-8	mg/m ³	1.6E-10	(mg/m³)	NA.	(ug/m ³) ⁻¹	0.26-12	4.8E-10	(mg/m³)	1.0E-05	(mg/m³)	0.000001
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m ³	1.6E-12	(mg/m³)	1.1E-03	1	1.8E-12	l .	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260	7.7E-11	mg/m ³	6.3E-13	(mg/m ³)	5.7E-04	(ug/m²):1	3.6E-12	2.6E-12	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total	1	1	Ingriii	0.02.13	(mg/m)	5.7E-04	(ug/m ³):1		1.8E-12	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total		<u> </u>							1.2E-09 1.2E-09					0.00006
	Exposure Medium Total															0.00006
Medium Total											1.2E-09					0.00006
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	6.2E-12	(mg/kg/day)	1.3E+05	1 (") 11	1.4E-05 8.1E-07					0.09
	, , , , ,			Arsenic	68.1	mg/kg	4.8E-06	(mg/kg/day) (mg/kg/day)	1.5E+00	(mg/kg/day)	l	1.8E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
				Cadmium	69.0	mg/kg	4.8E-06	(mg/kg/day) (mg/kg/day)	NA	(mg/kg/day)	7.1E-06	1.4E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.05
		i		Lead	1,672	mg/kg	1.2E-04	(mg/kg/day) (mg/kg/day)	NA.	(mg/kg/day)"		1.4E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.01
				Mercury	3.30	ma/ka	2.3E-07		NA	(mg/kg/day)		3.4E-04	(mg/kg/day)	NA	(mg/kg/day)	· ·
				Zing	3,500	mg/kg	2.4E-04	(mg/kg/day)		(mg/kg/day)		6.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.002
				Aroclor-1260	8.00		5.6E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		7.1E-04	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.002
			Exp. Route Total	A100101+1200	0.00	mg/kg	5.6E-U/	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	1.1E-06	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Dermal Dermal	2.3.7.8-TCDD Equivalents	0.05.5					,	9.1E-06				,	0.08
			Delmai	Arsenic	8.9E-5	mg/kg	7.4E-13	(mg/kg/day)	1.3E+05	(mg/kg/day)	9.7E-08	2.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.002
				Cadmium	68.1	mg/kg	5.7E-07	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	8.5E-07	1.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.006
					69.0	mg/kg	1.9E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		5.6E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.002
				Lead	1,672	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	9.2E-10	(mg/kg/day)	NA .	(mg/kg/day) ⁻¹		2.7E-09	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0001
			1	Zinc	3,500	mg/kg	9.7E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.8E-06	(mg/kg/day)	3.0E-01	(mg/kg/day)	0 000009
			-	Aroclor-1260	8.00	mg/kg	3.1E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)	6.2E-07	9.1E-07	(mg/kg/day)	NA	(mg/kg/day)	
		5	Exp. Route Total	L							1.6E-06					0.01
		Exposure Point Total						X			1.1E-05					0.09
	Exposure Medium Total										1.1E-05					0.09
	Alt .	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	2.8E-14	mg/m ³	2.2E-16	(mg/m³)	3.8E+01	(vg/m ³) ⁻¹	8.5E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
	1			Arsenic	2.15-8	mg/m³	1.7E-10	(mg/m³)	4.3E-03	(ug/m³)·1	7.4E-10	5.0E-10	(mg/m³)	1.5E-05	(mg/m ³)	0.00003
				ł												
				Cadmium	2.1E-8	mg/m³	1.7E-10	(mg/m³)	1.8E-03	(ug/m³)·1	3.1E-10	5.1E-10	(mg/m³)	1.0E-05	(mg/m ³)	0.00005

TABLE 7.10.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

O 32, INDIAN HEAD, MARYLAN PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	EF	С		Çar	ncer Risk Calcula	ations			Non-Ca	ncer Hazard C	alculations	
				Potential Concern	Value	Units	Intake/Exposur	e Concentration	CSF/L	Jnit Risk	Cancer Risk	Intake/Exposul	re Concentration	Rf	D/RfC	Hazard Quotier
····			1				Value	Units	Value	Units	1	Value	Units	Value	Units	<u> </u>
				Mercury	1.0E-9	mg/m³	8.3E-12	(mg/m ³)	NA ·	(ug/m³). '		2.4E-11	(mg/m³)	3.0E-05	(mg/m³)	0.0000008
	'			Zinc	1.1E-6	mg/m ³	8.8E-09	(mg/m³)	NA NA	(ug/m ³) ⁻¹		2.6E-08	(mg/m³)	NA NA	(mg/m³)	
				Aroclor-1260	2.5E-9	mg/m³	2.0E-11	(mg/m³)	5.7E-04	(ug/m³) ⁻¹	1.1E-11	5.9E-11	(mg/m³)	NA	(mg/m ³)	
			Exp. Route Total								1.1E-09					0.00008
		Exposure Point Total						•			1.1E-09					80000.0
	Exposure Medium Total										1.1E-09					0.00008
Medium Total											1.1E-05					0.09
Surface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	6.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day)-1	8.1E-07	1.8E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.02
			i	Arsenic	143	mg/kg	1.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.5E-05	2.9E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.10
*			1	Cadmium	13.1	mg/kg	9.1E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.7E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.003
				Lead	503	mg/kg	3.5E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.0E-04	(mg/kg/day)	NA.	(mg/kg/day)	
				Mercury	3.30	mg/kg	2.3E-07	(mg/kg/day)	NA	(mg/kg/day)		6.7E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0 002
			1	Zinc	3,500	mg/kg	2.4E-04	(mg/kg/day)	NA NA	(mg/kg/day)		7 1E-04	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.002
				Benzo(a)pyrene Equivalents	0.360	mg/kg	4.6E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	3.4E-07	7.3E-08	(mg/kg/day)	NA.	(mg/kg/day)	
]		Aroclor-1260	4.40	mg/kg	3.1E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)	6.1E-07	9.0E-07	(mg/kg/day)	NA.	(mg/kg/day)	
			Exp. Route Total	 				1 . 3 3 7/	L	1 (55)/	1.7E-05	 	3 3 //		1 3 .3,.	0.1
			Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	7.4E-13	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	9.7E-08	2.2E-12	(mg/kg/day)	1.0E-09	(mg/kg/day)	0 002
				Arsenic	143	mg/kg	1.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.8E-06	3.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Cadmium	13.1	mg/kg	3.6E-09	(mg/kg/day)	NA	(mg/kg/day)		1.1E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0004
		ļ		Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA.	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	9.2E-10	(mg/kg/day)	NA NA	(mg/kg/day)		2.7E-09	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0001
				Zinc	3,500		9.7E-07		NA NA	1		2.8E-06		3.0E-01	1	
				Benzo(a)pyrene Equivalents	0.360	mg/kg mg/kg	2.4E-08	(mg/kg/day)	7.3E+00	(mg/kg/day)	1.7E-07	3.8E-08	(mg/kg/day)	NA NA	(mg/kg/day)	0.000009
				1	4.40			(mg/kg/day)	1	(mg/kg/day)			(mg/kg/day)		(mg/kg/day)	
			Exp. Route Total	Aroclor-1260	4,40	mg/kg	1.7E-07	(mg/kg/day)	2 0E+00	(mg/kg/day) ⁻¹	3.4E-07 2.4E-06	5.0E-07	(mg/kg/day)	NA NA	(mg/kg/day)	
		Exposure Point Total	Exp. Houte Total	<u> </u>									·			0.01
		Exposure Point Total	<u> </u>								1.9E-05					0.1
	Exposure Medium Total	1,000		1						T	1.9E-05					0.1
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	2.8E-14	mg/m ³	2.2E-16	(mg/m³)	3.8E+01	(ug/m³) ⁻¹	8.5E-12	6.5E-16	(mg/m³)	4.0E-08	(mg/m³)	0.00000002
				Arsenic	4.4E-8	mg/m³	3.6E-10	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	1.5E-09	1.1E-09	(mg/m ³)	1.5E-05	(mg/m³)	0.00007
				Cadmium	4.1E-9	mg/m³	3.3E-11	(mg/m³)	1.8E-03	(ug/m³) ⁻¹	5.9E-11	9.6E-11	(mg/m³)	1.0E-05	(mg/m³)	0.000010
	ì			Lead	1.6E-7	mg/m³	1.3E-09	(mg/m³)	NA NA	(ug/m ³) ⁻¹		3.7E-09	(mg/m³)	NA	(mg/m³)	-
				Mercury	1.0E-9	mg/m³	8.3E-12	(mg/m³)	NA NA	(ug/m³) ⁻¹		2.4E-11	(mg/m³)	3.0E-05	(mg/m³)	0.0000008
			1	Zinc	1.1E-6	mg/m³	8.8E-09	(mg/m³)	NA	(ug/m³) ⁻¹		2.6E-08	(mg/m ³)	NA	(mg/m³)	
				Benzo(a)pyrene Equivalents	1.1E-10	mg/m³	1.7E-12	(mg/m³)	1.1E-03	(ug/m³) ⁻¹	1.8E-12	2.6E-12	(mg/m ³)	NΑ	(mg/m³)	
				Aroclor-1260	1.4E-9	mg/m³	1,1E-11	(mg/m³)	5.7E-04	(ug/m³)-1	6.3E-12	3.2E-11	(mg/m³)	NA	(mg/m ^a)	
)	Exp. Route Total	<u> </u>					10,00 /10== 10181,40=		1.6E-09					0.00008
		Exposure Point Total									1.6E-09					0.00008
	Exposure Medium Total										1.6E-09	ļ				0.00008
Medium Total	<u> </u>				,						1.9E-05			,		0.1
ubsurface Soil	Subsurface Soil	UXO 32	Ingestion	Aluminum	4,820	mg/kg	3.4E-04	(mg/kg/day)	NA	(mg/kg/day)	••	9.8E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0010
				Arsenic	110	mg/kg	7.7E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.2E-05	2.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.07
			1	Cobalt	18.9	mg/kg	1.3E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		3.8E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.01
				Iron	9,742	mg/kg	6.8E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.0E-03	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.003
				Manganese	122	- mg/kg	8.5E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.5E-05	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.001
	1	1	I	Vanadium	27.4	mg/kg	1.9E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		5.6E-06	(mg/kg/day)	5.0E-03	(mg/kg/day)	0.001

TABLE 7.10 RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timelrame: Future

Receptor Population: Recreational User

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Car	cer Risk Calcula	ations			Non-Ca	ncer Hazard C	alculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/I	Jnit Risk	Cancer Risk	Intake/Exposu	re Concentration	R1	D/RIC	Hazard Quot
· · · · · · · · · · · · · · · · · · ·							Value	Units	Value	Units		Value	Units	Value	Units	1
				Benzo(a)pyrene Equivalents	0.480	mg/kg	6.1E-08	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	4.5E-07	9.8E-08	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total								1.2E-05		-1		1	0.09
			Dermal	Aluminum	4,820	mg/kg	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)		3.9E-06	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.00000
				Arsenic	110	mg/kg	9.2E-07	(mg/kg/day)	1.5E+00	(mg/kg/day)"	1.4E-06	2.7E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.009
		į	}	Coball	18.9	mg/kg	5.3E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.5E-08	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.00005
				Iron	9,742	mg/kg	2.7E-06	(mg/kg/day)	,NA	(mg/kg/day) ⁻¹		7.9E-06	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.00001
				Manganese	122	mg/kg	3.4E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		9.9E-08	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.0001
				Vanadium	27.4	mg/kg	7.6E-09	(mg/kg/day)	NA	(mg/kg/day) 1		2.2E-08	(mg/kg/day)	5.0E-03	(mg/kg/day)	0.000004
				Benzo(a)pyrene Equivalents	0.480	mg/kg	3.2E-08	(mg/kg/day)	7.3É+00	(mg/kg/day) ⁻¹	2.3E-07	5.1E-08	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total								1.6E-06					0.009
		Exposure Point Total									1.4E-05				127-00-00-	0.1
	Exposure Medium Total										1.4E-05			· · · · · · · · · · · · · · · · · · ·		0.1
	Air	UXO 32	Inhalation	Aluminum	1.5E-6	mg/m³	1.2E-08	(mg/m³)	NA	(ug/m ³) ⁻¹		3.5E-08	(mg/m³)	5.0E-03	(mg/m³)	0.000007
	1			Arsenic ,	3.4E-8	mg/m³	2.8E-10	(mg/m³)	4.3E-03	(ug/m ³) ⁻¹	1.2E-09	8.1E-10	(mg/m³)	1.5E-05	(mg/m³)	0.00005
	i			Cobalt	5.9E-9	mg/m³	4.8E-11	(mg/m ³)	9.0E-03	(ug/m³)-1	4.3E-10	1.4E-10	(mg/m³)	6.0E-06	(mg/m ³)	0 00002
				Iron	3.0E-6	mg/m³	2.5E-08	(mg/m³)	NA	(ug/m ³) ⁻¹		7.2E-08	(mg/m ³)	NA	(mg/m³)	
				Manganese	3 8E-8	mg/m ³	3.1E-10	(mg/m³)	NA	(ug/m³)' '		9.0E-10	(mg/m³)	5.0E-05	(mg/m³)	0.00002
				Vanadium	8.5E-9	mg/m ³	6.9E-11	(mg/m³)	NA	(ug/m³)··		2.0E-10	(mg/m³)	NA	(mg/m³)	
				Benzo(a)pyrene Equivalents	1.5E-10	mg/m³	2.2E-12	(mg/m³)	1.1E-03	(ug/m³) ⁻¹	2.4E-12	3.5E-12	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total								1.6E-09		• • • • • • • • • • • • • • • • • • • •		· : · · ·	0.0001
		Exposure Point Total									1.6E-09					0.0001
	Exposure Medium Total										1.6E-09					0.0001
Medium Total											1.4E-05					0.1

TABLE 7.11.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Can	cer Risk Calcula	tions			Non-Cai	ncer Hazard Ca	alculations	
				Potential Concern	Value	Units	Intake/Exposur	e Concentration	CSF/L	Jnit Risk	Cancer Risk	Intake/Exposur	e Concentration	RI	D/RIC	Hazard Quotier
							Value	Units	Value	Units		Value	Units	Value	Units	1 .
Surface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	1.2E-04	(mg/kg/day)	1 5E+00	(mg/kg/day)	1.9E-04	1.5E-03	(mg/kg/day)	3 0E-04	(mg/kg/day)	4.9
				Cadmium	1.80	mg/kg	2.0E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.3E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.02
	1		1	Lead	65.1	mg/kg	7.1E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		8.3E-04	(mg/kg/day)	NA	(mg/kg/day)	
				Benzo(a)pyrene Equivalents	0.350	mg/kg	2.0E-06	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.5E-05	4.5E-06	(mg/kg/day)	NA	(mg/kg/gay)	
				Aroclor-1260	0.250	mg/kg	2.7E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)."	5.5E-07	3.2E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total		L <u>-</u>		1			1 ,3	2.0E-04				1	4.9
			Dermal	Arsenic	114	mg/kg	1.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.6E-05	1.2E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.4
				Cadmium .	1.80	mg/kg	5.5E-09	(mg/kg/day)	NA.	(mg/kg/day) 1		6.4E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.003
			1	Lead	65.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day) 1		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
			į	Benzo(a)pyrene Equivalents	0.350	mg/kg	7.4E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	5.4E-06	1.6E-06	(mg/kg/day)	NA	(mg/kg/day)	
			İ	Aroclor-1260	0.250	mg/kg	1.1E-07	(mg/kg/day)	2.0E+00	(mg/kg/day) 1	2.1E-07	1.3E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total	 	L		<u> </u>		·	1	2.1E-05	1	·			0.4
		Exposure Point Total					1				2.2E-04					5.3
	Exposure Medium Total							· · · · · · · · · · · · · · · · · · ·			2.2E-04			··		5.3
	Air	UXO 32	Inhalation	Arsenic	1 0E-8	mg/m³	8.5E-10	(mg/m³)	4.3E-03	(ug/m ³)-1	3.7E-09	9.9E-09	(mg/m³)	1.5E-05	(mg/m ³)	0 0007
	,			Cadmium	1.6E-10	mg/m ³	1 3E-11	(ma/m³)	1.8E-03	(ug/m³)	2.4E-11	1.6E-10	(mg/m ³)	1 0E-05	(mg/m ³)	0 00002
ı				Lead	5.9E-9	mg/m ³	4 9E-10	(mg/m³)	NA .	(ug/m³)"		5.7E-09	(mg/m³)	NA	(mg/m ³)	'
				Benzo(a)pyrene Equivalents	3 2E-11	mg/m ³	1.4E-11	(mg/m ³)	1.1E-03	(ug/m ³).1	1.5E-11	3.1E-11	(mg/m³)	NA	(mg/m ³)	
			1	Aroclor-1260	2.3E-11	mg/m ³	1 9E-12	(mg/m³)	5,7E-04	(ug/m³)-1	1.1E-12	2.2E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total	1	1				<u> </u>	1	3.7E-09	 	1		L	0 0007
	İ	Exposure Point Total					 				3.7E-09	i				0.0007
	Exposure Medium Total		*************				<u> </u>				3.7E-09	1				0 0007
Medium Total	Exposite Mediani Tetal			· · · · · · · · · · · · · · · · · · ·							2.25-04				7	53
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	9.8E-11	(mg/kg/day)	1.3E+05	(mg/kg/day)	1.3E-05	1.1E-09	(mg/kg/day)	1 0E-09	(mg/kg/day)	1 1
**······	,			Arsenic	68.1	mg/kg	7.5E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	1.1E-04	8.7E-04	(mg/kg/day)	3 0E-04	(mg/kg/day)	2.9
				Cadmium	69.0	mg/kg	7.6E-05	(mg/kg/day)	NA NA	(mg/kg/day)		8.8E-04	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.9
				Lead	1,672	mg/kg	1.8E-03	(mg/kg/day)	NA.	(mg/kg/day)		2.1E-02	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	3.6E-06	(mg/kg/day)	NA	(mg/kg/day)		4.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
I				Zinc	3,500	mg/kg	3.8E-03	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		4.5E-02	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.1
				Aroclor-1260	8.00	mg/kg	8.8E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	1.8E-05	1.0E-04	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total		1	1	 	1 0 3 13 1 177	1	1 (99.22)	1.4E-04				.1	5.2
			Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	8.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.1E-06	9.6E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.10
			1	Arsenic	68.1	mg/kg	6.3E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	9.4E-06	7.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.2
				Cadmium	69.0	mg/kg	2.1E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.5E-06	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.10
		ł		Lead	1.672	mg/kg	0.0E+00	(mg/kg/day)	NA NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/gay)	
				Mercury	3.30	mg/kg	1.0E-08	(mg/kg/day)	NA	(mg/kg/day)"		1.2E-07	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.006
				Zinc	3,500	mg/kg	1.1E-05	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		1.3E-04	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.0004
				Aroclor-1260	8.00	mg/kg	3.4E-06	(mg/kg/day)	2.0E+00	(mg/kg/day) ⁻¹	6.9E-06	4.0E-05	(mg/kg/day)	NA	(mg/kg/day)	
			For Doub Tabel	Aroctor-1260	0.00	ilig/kg	3.42-06	(Iligricg/day)	2.00.400	(mg/kg/day)	1.7E-05	4.02-03	(mg/kg/day/		(mg/kg/ddy)	0.4
		Conserve Daint T-1-1	Exp. Route Total	L			 	· · · · · · · · · · · · · · · · · · ·			1.6F-04	 				5.7
		Exposure Point Total					 				1.6E-04	 				5.7
	Exposure Medium Total	T			1 215/-	1	0.75.40	1	2.85.01	1	1.6E-04 2.5E-11	7.8E-15	(3)	4.0E-08	(ma/m³)	0 0000002
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	8.1E-15	mg/m³	6.7E-16	(mg/m ³)	3.8E+01	(ug/m³)`'			(mg/m³)	1.5E-05	(mg/m³)	0 0000002
		}	1	Arsenic	6.2E-9	mg/m³	5.1E-10	(mg/m³)	4.3E-03	(ug/m³)-1	2.2E-09	5.9E-09	(mg/m³)	1.5E-05 1.0E-05	(mg/m³)	0.0004
d				Cadmium	6.3E-9	mg/m³	5.2E-10	(mg/m³)	1.8E-03	(ug/m³)' l	9.3E-10	6.0E-09	(mg/m ³)		(mg/m³)	0.0006
4	t	1	1	Lead	1.5E-7	mg/m ³	1.2E-08	(mg/m³)	NA.	(ug/m³)·1		1.5E-07	(mg/m ³)	NA NA	(mg/m³)	1

TABLE 7.11.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of		PC			cer Risk Calcul	ations			Non-Car	ncer Hazard C	alculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/	Unit Risk	Cancer Risk	Intake/Exposu	re Concentration		ID/RIC	Hazard Quoties
							Value	Units	Value	Units	1	Value	Units	Value	Units	-
				Mercury	3.0E-10	mg/m³	2.5E-11	(mg/m³)	NA	(ug/m ³) ⁻¹		2.9E-10	(mg/m³)	3.0E-05	(mg/m³)	0.000010
				Zinc	3.2E-7	mg/m³	2.6E-08	(mg/m³)	NA	(ug/m³) ⁻¹		3.1E-07	(mg/m ³)	NA	(mg/m³)	
		ļ		Aroclor-1260	7.3E-10	mg/m³	6.0E-11	(mg/m³)	5.7E-04	(ug/m³)·1	3.4E-11	7.0E-10	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total			-L	1			(49/11/	3.2E-09		(mg/m)		(mg/m)	0.001
		Exposure Point Total		L	*											
	Exposure Medium Total	<u> </u>					ļ			· · · · · · · · · · · · · · · · · · ·	3.2E-09					0.001
Medium Total											3.2E-09					0.001
Surface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	0.05.6	T					1.6E-04		,			5.7
The service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the se	Danison Con (raidie)	0.00 32	lingestion	· ·	8.9E-5	mg/kg	9.8E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.3E-05	1.1E-09	(mg/kg/day)	1.0E-09	(mg/kg/day)	1,1
				Arsenic	143	mg/kg	1.6E-04	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	2.4E-04	1.8E-03	(mg/kg/day)	3.0E-04	(mg/kg/day)	6.1
				Cadmium	13.1	mg/kg	1.4E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.7E-04	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.2
				Lead	503	mg/kg	5.5E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.4E-03	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	3.6E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.2E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.1
				Zinc ·	3,500	mg/kg	3.8E-03	(mg/kg/day)	NA	(mg/kg/day)		4.5E-02	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.1
				Benzo(a)pyrene Equivalents	0.360	mg/kg	2.1E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)	1.5E-05	4.6E-06	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	4.8E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	9.6E-06	5.6E-05	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total					·		1	2.7E-04		1 . 3 3 // . 1		1 (99.2-7)	7.7
			Dermal	2,3,7,8-TCDD Equivalents	8.9E-5	rng/kg	8.2E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	1.1E-06	9 6E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.10
				Arsenic	143	mg/kg	1.3E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)	2.0E-05	1.5E-04	(mg/kg/day)	3 0E-04		
				Cadmium	13.1	mg/kg	4.0E-08	(mg/kg/day)	NA			4 7E-07	1		(mg/kg/day)	0.5
				Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA.	(mg/kg/day)		1	(mg/kg/day)	2 5E-05	(mg/kg/day)	0.02
				Mercury	3.30	mg/kg	1.0E-08	1		(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	
				Zinc	3,500			(mg/kg/day)	NA	(mg/kg/day)		1.2E-07	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.006
					1	mg/kg	1.1E-05	(mg/kg/day)	NA	(mg/kg/day)		1.3E-04	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.0004
				Benzo(a)pyrene Equivalents Aroctor-1260	0.360	mg/kg	7.7E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	5.6E-06	1.7E-06	(mg/kg/day)	NA	(mg/kg/day)	-
			5 5 5 5 1	Arocior-1260	4.40	mg/kg	1.9E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	3.8E-06	2.2E-05	(mg/kg/day)	NA NA	(mg/kg/day)	
			Exp. Route Total								3.0E-05					0.6
		Exposure Point Total									3.0E-04					8.3
	Exposure Medium Total				·	,					3.0E-04					8.3
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	8.1E-15	mg/m³	6.7E-16	(mg/m³)	3.8E+01	(ug/m³) ⁻¹	2.5E-11	7.8E-15	(mg/m³)	4.0E-08	(mg/m ³)	0.0000002
				Arsenic	1.3E-8	mg/m³	1.1E-09	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	4.6E-09	1.2E-08	(mg/m³)	1.5E-05	(mg/m ³)	0.0008
				Cadmium	1.2E-9	mg/m³	9.8E-11	(mg/m³)	1.8E-03	(ug/m³) ⁻¹	1.8E-10	1.1E-09	(mg/m³)	1.0E-05	(mg/m ³)	0.0001
				Lead	4.6E-8	mg/m³	3.8E-09	(mg/m³)	NA	(ug/m ³) ⁻¹		4.4E-08	(mg/m³)	NA	(mg/m³)	
				Mercury	3.0E-10	mg/m³	2.5E-11	(mg/m³)	NA	(ug/m³)·1		2.9E-10	(mg/m³)	3.0E-05	(mg/m³)	0.000010
			1	Zinc	3.2E-7	mg/m³	2.6E-08	(mg/m³)	NA	(ug/m³)·1		3.1E-07	(mg/m³)	NA	(mg/m³)	
			1 .	Benzo(a)pyrene Equivalents	3.3E-11	mg/m³	1.4E-11	(mg/m³)	1.1E-03	(ug/m ³)-1	1.6E-11	3.1E-11	(mg/m³)	NA	(mg/m³)	
			1	Aroclor-1260	4.0E-10	mg/m ³	3.3E-11	(mg/m³)	5.7E-04	(ug/m³)·1	1.9E-11	3.8E-10	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total		٠	1		(g)		(ugiiii /	4.8E-09	0.02.70	(mg/m)	- 110	(mg/m)	0.0010
		Exposure Point Total			***						4.8E-09		 	·		
	Exposure Medium Total			······································							4.8E-09		· · · · · · · · · · · · · · · · · · ·			0.0010
Medium Total				······································				*							·	0.0010
ubsurface Soil	Subsurface Soil	UXO 32	Ingestion	Aluminum	4,820	mg/kg	5.3E-03	(mg/kg/day)	NA NA		3.0E-04	2.05.00			r	8.3
			ingos.ion	Arsenic	ł	1	li			(mg/kg/day)		6.2E-02	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.06
					110	mg/kg	1.2E-04	(mg/kg/day)	1.5E+00	(mg/kg/day)."	1.8E-04	1.4E-03	(mg/kg/day)	3.0E-04	(mg/kg/day)	4.7
	1.		1 !	Cobalt	18.9	mg/kg	2.1E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.4E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.8
				Iron	9,742	mg/kg	1.1E-02	(mg/kg/day)	NA	(mg/kg/day)"		1.2E-01	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.2
				Manganese	122	mg/kg	1.3E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.6E-03	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.06
			1	Vanadium	27.4	mg/kg	3.0E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		3.5E-04	(mg/kg/day)	5.0E-03	1	0.07

TABLE 7.11.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC		Car	cer Risk Calcu	lations			Non-Ca	ncer Hazard C		
		1		Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF	/Unit Risk	Cancer Risk	Intake/Exposu	re Concentration	Rf	ID/RIC	Hazard Quoti
<u> </u>					l		. Value	Units	Value	Units	1	Value	Units	Value	Units	
				Benzo(a)pyrene Equivalents	0.480	mg/kg	2.8E-06	(mg/kg/day)	7.3E+00	(mg/kg/day)"	2.0E-05	6.1E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total								2.0E-04					5.9
			Dermai	Aluminum	4,820	mg/kg	1.5E-05	(mg/kg/day)	NA	(mg/kg/day)		1.7E-04	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.0002
	Ì	ļ		Arsenic	110	mg/kg	1.0E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.5E-05	1.2E-04	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.4
				Cobalt	18.9	mg/kg	5.8E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.8E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0 002
				Iron	9.742	mg/kg	3.0E-05	(mg/kg/day)	NA	(mg/kg/day)"		3.5E-04	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.0005
				Manganese	122	mg/kg	3.7E-07	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.4E-06	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.005
				Vanadium	27.4	mg/kg	8.4E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		9.8E-07	(mg/kg/day)	5.0E-03	(mg/kg/day)	0 0002
				Benzo(a)pyrene Equivalents	0.480	mg/kg	1.0E-06	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	7.5E-06	2.2E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total								2.3E-05			·		0.4
		Exposure Point Total									2.2E-04					6.3
	Exposure Medium Total										2.2E-04					6.3
	Air	UXO 32	Inhalation	Aluminum	4.4E-7	mg/m³	3.6E-08	(mg/m³)	NA	(ug/m³)-1		4.2E-07	(mg/m³)	5.0E-03	(mg/m³)	0.00008
				Arsenic	1.0E-8	mg/m³	8.2E-10	(mg/m³)	4.3E-03	(ug/m³) ⁻¹	3.5E-09	9.6E-09	(mg/m³)	1.5E-05	(mg/m³)	0.0006
		1		Cobalt	1.7E-9	mg/m³	1.4E-10	(mg/m ³)	9.0E-03	(ug/m³)-1	1.3E-09	1.6E-09	(mg/m³)	6.0E-06	(mg/m³)	0.0003
				Iron	8.9E-7	mg/m³	7.3E-08	(mg/m³)	NA	(ug/m ³) ⁻¹		8.5E-07	(mg/m³)	NA	(mg/m³)	1
				Manganese	1.1E-8	mg/m³	9.1E-10	(mg/m³)	NA	(ug/m³).'		1.1E-08	(mg/m³)	5.0E-05	(mg/m³)	0.0002
				Vanadium	2.5E-9	mg/m³	2.0E-10	(mg/m³)	NA	(ug/m³)°		2 4E-09	(mg/m³)	NA	(mg/m ³)	
				Benzo(a)pyrene Equivalents	4.4E-11	mg/m²	1.9E-11	(mg/m³)	1 1E-03	(ug/m³)-1	2.1E-11	4 2E-11	(mg/m³)	NA	(mg/m ³)	
			Exp. Route Total								4.8E-09					0.001
		Exposure Point Total									4.8E-09					0.001
	Exposure Medium Total		X. 2								4.8E-09					0.001
Medium Total							1				2.2E-04					6.3

TABLE 7.12.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC	T	2-	non Diele College							
		Ì	-	Potential Concern	Value	Units	Intake/Exposi	re Concentration	ncer Risk Calcul	ations Unit Risk		 	Non-Ca	ancer Hazard (
							Value	Units	 		Cancer Risk		ure Concentration	P	fD/RfC	Hazard Quotie
urface Soil (current)	Surface Soil (current)	UXO 32	Ingestion	Arsenic	114	mg/kg	5.4E-05		Value	Units		Value	Units	Value	Units	7
				Cadmium	1.80	mg/kg	8.5E-07	(mg/kg/day)	1.5E+00	(mg/kg/day) 1	8.0E-05	1.6E-04	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.5
				Lead	65.1			(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.5E-06	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.002
			1	Benzo(a)pyrene Equivalents	0.350	mg/kg	3.1E-05	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		8.9E-05	(mg/kg/day)	NA	(mg/kg/day)	
				Aroclor-1260	1	mg/kg	3.0E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	2.2E-06	4.8E-07	(mg/kg/day)	NΑ	(mg/kg/day)	
			Exp. Roule Total	A100101-1200	0.250	mg/kg	1.2E-07	(mg/kg/day)	2.0E+00	(mg/kg/day)	2.3E-07	3.4E-07	(mg/kg/day)	NA	(mg/kg/day)	-
		1	Dermal	Arsenic		,		.,			8.3E-05				1 2 2 7	0.5
	•		Derma	Cadmium	114	mg/kg	6.4E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	9.6E-06	1.9E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
				Lead	1.80	mg/kg	3.4E-09	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		9.8E-09	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.0004
					65.1	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)		0.0E+00	(mg/kg/day)	NA	(mg/kg/day)	0.0004
				Benzo(a)pyrene Equivalents	0.350	mg/kg	1.6E-07	(mg/kg/day)	7.3E+00	(mg/kg/day) ⁻¹	1.1E-06	2 5E-07	(mg/kg/day)	NΑ	(mg/kg/day)	
				Arocior-1260	0.250	mg/kg	6.6E-08	(mg/kg/day)	2.0E+00	(mg/kg/day) 1	1.3E-07	1.9E-07	(mg/kg/day)	NA.		
			Exp. Route Total							1	1.1E-05		(mg/kg/day)	INA	(mg/kg/day)	
		Exposure Point Total									9.4E-05					0.06
	Exposure Medium Total										9.4E-05					0.6
	Air	UXO 32	Inhalation	Arsenic	1.0E-8	mg/m³	3.4E-09	(mg/m³)	4.3E-03	(ug/m ³)-1		2.05	· · · · · · · · · · · · · · · · · · ·			0.6
				Cadmium	1.6E-10	mg/m³	5.4E-11	(mg/m³)	1.8E-03	1 - 1	1.5E-08	9.9E-09	(mg/m³)	1.5E-05	(mg/m³)	0.0007
	ĺ			Lead	5.9E-9	mg/m³	1.9E-09	(mg/m³)	NA NA	(ug/m³):1	9.7E-11	1.6E-10	(mg/m³)	1.0E-05	(mg/m ³)	0.00002
			1	Benzo(a)pyrene Equivalents	3.2E-11	mg/m³	1.9E-11			(ug/m ³) ⁻¹		5.7E-09	(mg/m³)	NA	(mg/m³)	
	1			Aroclor-1260	2.3E-11	mg/m ³	7.5E-12	(mg/m³)	1.1E-03	(ug/m ³)-1	2.1E-11	3.1E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total		2.02-11	riig/m	7.56-12	(mg/m³)	5.7E-04	(ug/m³) ⁻¹	4.3E-12	2.2E-11	(mg/m³)	NA	(mg/m³)	
		Exposure Point Total						·	-		1.5E-08					0.0007
	Exposure Medium Total	** · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·				·				1.5E-08					0.0007
Medium Total											1.5E-08				-	0.0007
face Soil (under cap)	Surface Soil (under cap)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents					·		9.4E-05					0.6
			ingestion	Arsenic	8 9E-5	mg/kg	4.2E-11	(mg/kg/day)	1.3E+05	(mg/kg/day) 1	5.4E-06	1.2E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.1
				i	68.1	mg/kg	3.2E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	4.8E-05	9.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.3
				Cadmium	69.0	mg/kg	3.2E-05	(mg/kg/day)	NA	(mg/kg/day)-1	[9.5E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.1
				Lead	1,672	mg/kg	7.9E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.3E-03	(mg/kg/day)	NA	(mg/kg/day)	0.1
			1	Mercury	3.30	mg/kg	1.5E-06	(mg/kg/day)	NA .	(mg/kg/day)"		4.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	
				Zinc	3,500	mg/kg	1.6E-03	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.8E-03	(mg/kg/day)	3.0E-01		0.02
	1		1	Arocior-1260		И					7.5E-06	1.1E-05	(mg/kg/day)		(mg/kg/day)	0.02
	1			THOUSE TEOD	8.00	mg/kg	3.8E-06	(mg/kg/day)	2.0E+00	(mg/kg/dav)''				NA	(mg/kg/day)	
			Exp. Route Total	1200	8.00	mg/kg	3.8E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)			1 3 -3 77			0.6
			Exp. Roule Total	2.3.7,8-TCDD Equivalents	8.9E-5	mg/kg mg/kg	3.8E-06 5.0E-12				6.1E-05					
			Exp. Roule Total Dermal	·				(mg/kg/day)	1.3E+05	(mg/kg/day) ⁻¹	6.1E-05 6.5E-07	1.5E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
			Exp. Roule Total Dermal	2,3.7,8-TCDD Equivalents	8.9E-5	mg/kg mg/kg	5.0E-12 3.8E-06	(mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06	1.5E-11 1.1E-05	(mg/kg/day) (mg/kg/day)	3.0E-04	(mg/kg/day) (mg/kg/day)	0.01 0.04
			Exp. Roule Total Dermal	2.3.7,8-TCDD Equivalents Arsenic	8.9E-5 68.1	mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06	1.5E-11 1.1E-05 3.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day)			
			Exp. Roule Total Dermal	2,3,7,8-TCDD Equivalents Arsenic Cadmium	8.9E-5 68.1 69.0 1,672	mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06	1.5E-11 1.1E-05 3.8E-07 0.0E+00	(mg/kg/day) (mg/kg/day)	3.0E-04	(mg/kg/day)	0 04
			Exp. Route Total Dermal	2,3,7,8-TCDD Equivalents Arsenic Cadmium	8.9E-5 68.1 69.0 1,672 3.30	mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06	1.5E-11 1.1E-05 3.8E-07	(mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05	(mg/kg/day) (mg/kg/day)	0 04 0.02
			Exp. Roule Total Dermal	2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury	8.9E-5 68.1 69.0 1,672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09 6.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06 	1.5E-11 1.1E-05 3.8E-07 0.0E+00	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day)	0 04 0.02
			Exp. Roule Total Dermal	2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury	8.9E-5 68.1 69.0 1,672 3.30	mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06 	1.5E-11 1.1E-05 3.8E-07 0.0E+00 1.8E-08	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA 2.1E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0 04 0.02 0.0009
		Exposure Point Total	Exp. Roule Total Dermal	2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury	8.9E-5 68.1 69.0 1,672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09 6.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06 	1.5E-11 1.1E-05 3.8E-07 0.0E+00 1.8E-08 1.9E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.04 0.02 0.0009 0.00006
	Exposure Medium Total	Exposure Point Total	Exp. Roule Total Dermal	2.3.7.8-TCDD Equivalents Arsenic Cadmium Lead Mercury	8.9E-5 68.1 69.0 1,672 3.30 3,500	mg/kg mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09 6.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06 	1.5E-11 1.1E-05 3.8E-07 0.0E+00 1.8E-08 1.9E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.04 0.02 0.0009 0.00006
	Exposure Medium Total		Exp. Route Total Dermal	2.3.7.8-TCDD Equivalents Arsenic Cadmium .ead Mercury Zinc Aroclor-1260	8.9E-5 68.1 69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09 6.6E-06 2.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06 4.2E-06	1.5E-11 1.1E-05 3.8E-07 0.0E+00 1.8E-08 1.9E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0.04 0.02 0.0009 0.00006 0.07
	Exposure Medium Total	Exposure Point Total UXO 32	Exp. Route Total Dermal Exp. Route Total	2.3.7.8-TCDD Equivalents Arsenic Cadmium .ead Mercury Zinc Aroclor-1260	8.9E-5 68.1 69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09 6.6E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA NA	(mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹ (mg/kg/day) ⁻¹	6.1E-05 6.5E-07 5.7E-06 4.2E-06 1.1E-05 7.2E-05	1.5E-11 1.1E-05 3.8E-07 0.0E+00 1.8E-08 1.9E-05	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0 04 0.02 0.0009 0.00006 0.07 0.6
	Exposure Medium Total		Exp. Route Total Dermal Exp. Route Total	2.3.7.8-TCDD Equivalents Arsenic Cadmium .ead Mercury Zinc Aroclor-1260	8.9E-5 68.1 69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09 6.6E-06 2.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA NA NA NA 2.0E+00	(mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹ (mg/kg/day) ¹	6.1E-05 6.5E-07 5.7E-06 4.2E-06 1.1E-05 7.2E-05	1.5E-11 1.1E-05 3.8E-07 0.0E+00 1.8E-06 1.9E-05 6.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0 04 0.02 0 0009 0 00006 0.07 0.6 0.6
	Exposure Medium Total		Exp. Route Total Dermal Exp. Route Total	2.3.7.8-TCDD Equivalents Arsenic Cadmium .ead Mercury Zinc Aroclor-1260	8.9E-5 68.1 69.0 1,672 3.30 3,500 8.00	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	5.0E-12 3.8E-06 1.3E-07 0.0E+00 6.2E-09 6.8E-06 2.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	1.3E+05 1.5E+00 NA NA NA NA 2.0E+00	(mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1 (mg/kg/day) 1	6.1E-05 6.5E-07 5.7E-06 	1.5E-11 1.1E-05 3.8E-07 0.0E+00 1.8E-08 1.9E-05 6.1E-06	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	3.0E-04 2.5E-05 NA 2.1E-05 3.0E-01 NA	(mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day) (mg/kg/day)	0 04 0.02 0.0009 0.00006 0.07 0.6

TABLE 7.12.RME CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of	E	PC	li .	Car	icer Risk Calcul	ations			Non Co	ncer Hazard C	`alculations	
				Potential Concern	Value	Units	Intake/Exposu	re Concentration		Unit Risk	Cancer Risk	Intake/Exposi	ire Concentration		D/RIC	Turnedo
					1		Value	Units	Value	Units	Cancerinsk	Value	Units	Value	Units	Hazard Quotie
	1.			Mercury	3.0E-10	mg/m³	9.9E-11	(mg/m³)	NA	(ug/m³):1		2.9E-10	(mg/m³)	3.0E-05	(mg/m³)	0.000010
			i	Zinc	3.2E-7	mg/m ³	1.0E-07	(mg/m³)	NA	(ug/m ³)-1		3.1E-07	(mg/m³):	NA.	1 -	0.000010
				Araclor-1260	7.3E-10	mg/m ³	2.4E-10	(mg/m³)	5.7E-04	(ug/m³).	1,4E-10	7.0E-10	(mg/m³)	NA.	(mg/m³)	
			Exp. Route Total		.'	Y	ļ	1		1 (ogm /	1.3E-08	1.02-10	(mg/m)	IVA	(mg/m ³)	
		Exposure Point Total					 				1 3E-08	ļ				0.001
	Exposure Medium Total			· · · · · · · · · · · · · · · · · · ·							1 3E-08				·	0.001
Medium Total								· · · · · · · · · · · · · · · · · · ·			7 2E-05					0.001
Surface Soil (future)	Surface Soil (future)	UXO 32	Ingestion	2,3,7,8-TCDD Equivalents	8.9E-5	rng/kg	4.2E-11	(mg/kg/day)	1.3E+05	10	5 4E-06	1.05.10	1		Υ	0.6
				Arsenic	143	mg/kg	6.7E-05	(mg/kg/day)	1.5E+00	(mg/kg/day)		1.2E-10	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.1
				Cadmium	13.1	mg/kg	6.2E-06	1		(mg/kg/day) 1	1 0E-04	2.0E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.7
				Lead	503		II .	(mg/kg/day)	. NA	(mg/kg/day)"		1.8E-05	(mg/kg/day)	1.0E-03	(mg/kg/day)	0.02
				Mercury		mg/kg	2.4E-04	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		6.9E-04	(mg/kg/day)	NA	(mg/kg/day)	
			Ì	Zinc	3.30	mg/kg	1.5E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.5E-06	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.02
)	3,500	mg/kg	1.6E-03	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		4.8E-03	(mg/kg/day)	3.0E-01	(mg/kg/day)	0.02
				Benzo(a)pyrene Equivalents	0,360	mg/kg	3.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	2.3E-06	4.9E-07	(mg/kg/day)	NA	(mg/kg/day)	
	i			Aroclor-1260	4.40	mg/kg	2.1E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	4.1E-06	6.0E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total		,			······			1.1E-04					0.8
			Dermai	2,3,7,8-TCDD Equivalents	8.9E-5	mg/kg	5.0E-12	(mg/kg/day)	1.3E+05	(mg/kg/day) 1	6.5E-07	1.5E-11	(mg/kg/day)	1.0E-09	(mg/kg/day)	0.01
				Arsenic	143	mg/kg	8.0E-06	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	1.2E-05	2.3E-05	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.08
				Cadmium	13.1	mg/kg	2.5E-08	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		7.2E-08	(mg/kg/day)	2.5E-05	(mg/kg/day)	0.00
				Lead	503	mg/kg	0.0E+00	(mg/kg/day)	NA	(mg/kg/day)		0.05+00	(mg/kg/day)	NA	(mg/kg/day)	
				Mercury	3.30	mg/kg	6.2E-09	(mg/kg/day)	NA	(mg/kg/day)		1.8E-08	(mg/kg/day)	2.1E-05	(mg/kg/day)	0.0009
			İ	Zinc	3,500	mg/kg	6 6E-06	(mg/kg/day)	NA	(mg/kg/day)		1.9E-05	(mg/kg/day)	3.0E-01	(mg/kg/day)	0 00006
				Benzo(a)pyrene Equivalents	0.360	mg/kg	1.6E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	1.2E-06	2 6E-07	(mg/kg/day)	NA.	(mg/kg/day)	
				Aroclor-1260	4.40	mg/kg	1.2E-06	(mg/kg/day)	2.0E+00	(mg/kg/day)	2.3E-06	3.4E-06	(mg/kg/day)	NA	(mg/kg/day)	
			Exp. Route Total		·					(9.1.9.007)	1.5E-05		(mg/kg/day)		(High Kgrday)	
		Exposure Point Total									1.3E-04					0.10
	Exposure Medium Total					·					1.3E-04					0.9
	Air	UXO 32	Inhalation	2,3,7,8-TCDD Equivalents	8.1E-15	mg/m³	2.7E-15	(mg/m³)	3.8E+01	(ug/m³).1	1.0E-10	7.8E-15	(mg/m³)	4.0E-08	T	
	·			Arsenic	1.3E-8	mg/m ³	4.3E-09	(mg/m³)	4.3E-03	(ug/m ³).1	1.8E-08	1.2E-08	(mg/m ³)	1.5E-05	(mg/m ³)	0.0000002
				Cadmium	1.2E-9	mg/m³	3.9E-10	(mg/m³)	1 8E-03	(ug/m³) ⁻¹	7.9E-10		1 1		(mg/m³)	0.0008
				Lead	4.6E-8	mg/m ³	1.5E-08	(mg/m ³)	NA.	(ug/m³)-1	7.50-10	1.1E-09	(mg/m³)	1.0E-05	(mg/m³)	0 0001
	i			Mercury	3.0E-10	mg/m ³	9.9E-11	(mg/m³)	NA.	1		4.4E-08	(mg/m ³)	NA	(mg/m³)	
				Zinc	3.2E-7	mg/m ³	1.0E-07			(ug/m ³) ⁻¹		2.9E-10	(mg/m³)	3 0E-05	(mg/m³)	0.000010
				Benzo(a)pyrene Equivalents	3.3E-11			(mg/m³)	NA	(ug/m ³) ⁻¹	**	3.1E-07	(mg/m³)	NA	(mg/m³)	
				Aroclor-1260		mg/m³	2.0E-11	(mg/m ³)	1.1E-03	(ug/m ³) ⁻¹	2.2E-11	3.1E-11	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total	Arocior-1280	4.0E-10	mg/m³	1.3E-10	(mg/m³)	5.7E-04	(ug/m³)-1	7.5E-11	3.8E-10	(mg/m³)	NA	(mg/m³)	<u> </u>
		Exposure Point Total	Exp. House Total								1.9E-08					0.0010
	Exposure Medium Total	CAPUSUIG FUIII 10181		4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1				····			1.9E-08					0.0010
Medium Total	L'Aposore Medium Total	· · · · · · · · · · · · · · · · · · ·									1.9E-08					0.0010
ubsurface Soil	Subsurface Soil	UXO 32	In another	All sections	1			· · · · · · · · · · · · · · · · · · ·			1.3E-04					0.9
200.000 0011	Sapauliace doll	UAU 32	Ingestion	Aluminum	4,820	mg/kg	2.3E-03	(mg/kg/day)	NA .	(mg/kg/day) ⁻¹		6.6E-03	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.007
				Arsenic	110	mg/kg	5.2E-05	(mg/kg/day)	1.5E+00	(mg/kg/day) ⁻¹	7.7E-05	1.5E-04	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.5
				Cobalt	18.9	mg/kg	8.9E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹	* *	2.6E-05	(mg/kg/day)	3 0E-04	(mg/kg/day)	0.09
				Iron	9,742	mg/kg	4.6E-03	(mg/kg/day)	NA	(mg/kg/day)		1.3E-02	(mg/kg/day)	7.0E-01	(mg/kg/day)	0.02
				Manganese	122	mg/kg	5.7E-05	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		1.7E-04	(mg/kg/day)	2.4E-02	(mg/kg/day)	0.007
	1		1	Vanadium	27.4	mg/kg	1.3E-05	(mg/kg/day)	NΑ	1			1 . 2 2 /			0.007

TABLE 7.12.RME

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

PAGE 3 OF 3

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of		PC		Car	ncer Risk Calcul	ations			Non-Ca	ncer Hazard C	alculations	
			Í	Potential Concern	Value	Units	Intake/Exposu	re Concentration	CSF/	Unit Risk	Cancer Risk	Intake/Exposu	re Concentration		D/RfC	Hazard Quo
·····							Value	Units	Value	Units	1 .	Value	Units	Value	Units	1182875 0000
				Benzo(a)pyrene Equivalents	0.480	mg/kg	4.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)	3.0E-06	6.6E-07	(mg/kg/day)	NA	(mg/kg/day)	-
			Exp. Route Total								8.1E-05		1 3 3 17		(High Agrobay)	
			Dermal	Aluminum	4,820	mg/kg	9.0E-06	(mg/kg/day)	NA	(mg/kg/day) ⁻¹		2.6E-05	(mg/kg/day)	1.0E+00	(mg/kg/day)	0.6
		•		Arsenic	110	mg/kg	6.2E-06	(mg/kg/day)	1.5E+00	(mg/kg/day)	9.3E-06	1.8E-05	(mg/kg/day)	3.0E-04		
				Coball	18.9	mg/kg	3.5E-08	(mg/kg/day)	·NA	(mg/kg/day)**		1.0E-07	(mg/kg/day)	3.0E-04	(mg/kg/day)	0.06
			İ	Iron	9,742	mg/kg	1.86-05	(mg/kg/day)	NA.	(mg/kg/day) ⁻¹		5.3E-05	(mg/kg/day)	7.0E-04	(mg/kg/day)	0.0003
				Manganese	122	mg/kg	2.3E-07	(mg/kg/dav)	NA	(mg/kg/day) ⁻¹		6.7E-07	(mg/kg/day)	9.6E-04	(mg/kg/day)	0.0000
				Vanadium	27.4	mg/kg	5.1E-08	(mg/kg/day)	NA.	(mg/kg/day)		1.5E-07	(mg/kg/day)	9.6E-04 5.0E-03	(mg/kg/day)	0.000
				Benzo(a)pyrene Equivalents	0.480	mg/kg	2.1E-07	(mg/kg/day)	7.3E+00	(mg/kg/day)"	1.6E-06	3.4E-07	1		(mg/kg/day)	0.0000
			Exp. Route Total		٠	J		(riging day)	7.02700	(mg/kg/day)	1.1E-05	3.4E-07	(mg/kg/day)	NA NA	(mg/kg/day)	
		Exposure Point Total						-			9.1E-05					0.06
	Exposure Medium Total										9.1E-05	<u></u>				0.7
	Air	UXO 32	Inhalation	Aluminum	4.4E-7	mg/m³	1.4E-07	(mg/m³)	NA	(ug/m³)·1		105.00	T			0.7
				Arsenic	1.0E-8	ma/m³	3.3E-09	(mg/m³)	4.3E-03			4.2E-07	(mg/m³)	5.0E-03	(mg/m ³)	0.0000
				Cobalt	1.7E-9	mg/m ³	5.6E-10		9.0E-03	(ug/m³) ⁻¹	1.4E-08	9.6E-09	(mg/m ³)	1.5E-05	(mg/m ³)	0.0006
	1			Iron .	8.9E-7	mg/m ³	2.9E-07	(mg/m ³)		(ug/m ³) ⁻¹	5.1E-09	1.6E-09	(mg/m ³)	6.0E-06	(mg/m³)	0.0003
				Manganese	1.1E-8	mg/m ³	3.6E-09	(mg/m³)	NA	(ug/m ³) ⁻¹		8.5E-07	(mg/m³)	NA	(mg/m³)	
				Vanadium	2.5E-9	,		(mg/m³)	NA	(ug/m³)··		1.1E-08	(mg/m³)	5.0E-05	(mg/m³)	0 0002
				Benzo(a)pyrene Equivalents	4.4E-11	mg/m³	8.2E-10	(mg/m³)	NA	(ug/m ³) ⁻¹		2.4E-09	(mg/m³)	NA	(mg/m³)	
			Exp. Route Total	berizo(a)pyrene Equivalents	4.4E-11	mg/m³	2.6E-11	(mg/m³)	1.1E-03	(ug/m³) ⁻¹	2.9E-11	4.2E-11	(mg/m³)	NA.	(mg/m ³)	
		Exposure Point Total	Exp. House Total								-1.9E-08					0.001
	Exposure Medium Total	Exposure Form Total	·					- · · · · · · · · · · · · · · · · · · ·			1.9E-08					0.001
Medium Total	JL - Passio Medicini Total										1.9É-08					0.001
						- 1					9.1E-05					0.7

RAGS Part D Table 9

Summary of Receptor Risks and Hazards for COPCs

LIST OF TABLES RAGS PART D TABLE 9 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS

Table No.

9.16.RME Lifelong Residents

REASONABLE MAXIMUM EXPOSURES

	Without Chemicals Less Than Background
9.1.RME	Construction Workers
9.2.RME	Industrial Workers
9.3.RME	Child Recreational Users
9.4.RME	Adult Recreational Users
9.5.RME	Lifelong Recreational Users
9.6.RME	Child Residents
9.7.RME	Adult Residents
9.8.RME	Lifelong Residents
	Including Chemicals Less Than Background
9.9.RME	Construction Workers
9.10.RME	Industrial Workers
9.11.RME	Child Recreational Users
9.12.RME	Adult Recreational Users
9.13.RME	Lifelong Recreational Users
9.14.RME	Child Residents
9.15.RME	Adult Residents

TABLE 9.1.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Current/Future Receptor Population: Construction Worker

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcii	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	8E-06	-	7E-07		9E-06	Skin, CVS	1		0.1	1
			Cadmium	٠.					Kidney	0.01		0.0007	0.01
		}	Lead		1		- 1		NA NA				
			Benzo(a)pyrene Equivalents	1E-07		5E-08	-	2E-07	NA ·				
			Aroclor-1260	2E-08		1E-08	1	3E-08	NA NA				
			Chemical Total	8E-06		8E-07		9E-06		1		0.1	1
		Exposure Point Total						9E-06	<u> </u>		<u> </u>	<u> </u>	<u> </u>
		Medium Total						9E-06					
	Air	UXO 32	Arsenic		1E-06	···	1	1E-06	NA NA		1		1
			Cadmium		7E-09			7E-09	Kidney		0.03		0.03
			Lead Benzo(a)pyrene Equivalents		9E-10			9E-10	NA NA				
			Aroclor-1260		3E-10			3E-10	NA NA				
			Chemical Total		1E-06		 	1E-06	l NA				
	1	Exposure Point Total					'	1E-06		<u> </u>	1		1
	Exposure	Medium Total						1E-06					1
Medium Total			-44		· · · · · ·			1E-05					1
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	5E-07		5E-08		6E-07	NA NA	0.3	1	0.00	0.3
			Arsenic	5E-06		4E-07		5E-06	Skin, CVS	0.7		0.03	1
			Cadmium					. JE 00	Kidney	0.7		0.07	0.8
			Lead						NA NA			0.03	0.2
	İ		Mercury										
			Zinc						Autoimmune	0.04		0.002	0.04
			Aroclor-1260	7E-07		3E-07			Blood	0.04		0.0001	0.04
			Chemical Total	6E-06		8E-07		1E-06	NA NA				·
		Exposure Point Total	One mean relati	0L-00		80-07	L	7E-06		. 1	<u> </u>	0.1	1
	Exposure	Medium Total						7E-06				· +xx	1
*	Air	UXO 32	2,3,7,8-TCDD Equivalents		8E-09			7E-06			,		11
		0.000	Arsenic		j		"	8E-09	NA .		0.0004		0.0004
			Cadmium		7E-07			7E-07	NA		0.7	**	0.7
					3E-07			3E-07	Kidney		1		1
			Lead				-	• -	NA				
			Mercury		**	**			CNS, Kidney	- +	0.02		0.02
			Zinc			**			NA				
			Aroclor-1260		1E-08		<u> </u>	1E-08	NA				
			Chemical Total		1E-06			1E-06			2		2
	1	Exposure Point Total		1			71	1E-06					2

TABLE 9.1.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Current/Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	T			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External	Exposure	Primary	Ingestion	Inhalation	Dermai	Exposure
	Exposure	Medium Total		├	<u></u>		(Radiation)	Routes Total	Target Organ(s)	<u></u>			Routes Total
Medium Total			· · · · · · · · · · · · · · · · · · ·					1E-06	ļ				2
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	5E-07		1		8E-06					3
			Arsenic	1E-05		5E-08		6E-07	NA	0,3		0.03	0.3
			Cadmium	15-05		9E-07		1E-05	Skin, CVS	2		0.14	2
			Lead	Į.					Kidney	0.04		0.01	0.0
			Mercury						NA			٠.	
			Zinc					- •	Autoimmune	0.04		0.002	0.04
							}		Blood	0.04		0.0001	0.04
			Benzo(a)pyrene Equivalents	1E-07		5E-08		2E-07	NA				
			Arocior-1260	4E-07		2E-07		6E-07	NA				
		Exposure Point Total	Chemical Total	1E-05		1E-06		1E-05		2		0.2	2
	Evpanus	Medium Total						1E-05					2
	Air							1E-05					2
	All	UXO 32	2,3,7,8-TCDD Equivalents	-	8E-09	**		8E-09	NA		0.0004		0.0004
			Arsenic		1E-06			1E-06	NA		2		2
			Cadmium		5E-08			5E-08	Kidney		0.2		0.2
			Lead					'	NA				
			Mercury						CNS, Kidney		0.02		0.02
			Zinc						NA				
		•	Benzo(a)pyrene Equivalents		9E-10			9E-10	NA				
			Aroclor-1260		6E-09			6E-09	NA				
			Chemical Total		1E-06		1	1E-06			2		2
		Exposure Point Total						1E-06			<u> </u>		2
	Exposure Medium Total					**********		1E-06					2
edium Total	,, , , , , , , , , , , , , , , , , , ,				*	·		1E-05	v 			 _	
ubsurface Soil	Subsurface Soil	UXO 32			· ·							<u></u> _	4
			Arsenic	8E-06		7E-07		8E-06	Skin, CVS	1		0.4	
			Benzo(a)pyrene Equivalents	2E-07		6E-08		2É-07	NA NA			0.1	1
		L	Chemical Total	8E-06		7E-07		9E-06	IVA				···
		Exposure Point Total					<u> </u>	9E-06		1		0.1	1
	Exposure I	Medium Total	· · · · · · · · · · · · · · · · · · ·					9E-06					1
	Air	UXO 32						91.00					11
			Arsenic		1E-06			15.00					
			Benzo(a)pyrene Equivalents		1E-09			1E-06	NA	• •	1		1
	1	1	Chemical Total		1E-06			1E-09	NA				

TABLE 9 1.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Current/Future Receptor Population: Construction Worker

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcin	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Roules Tota
		Exposure Point Total					-	1E-06					
	Exposure Medium Total							1E-06			· · · · · · · · · · · · · · · · · · ·		1
ledium Total						.:		1E-05					2

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.2.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential		·	Carcinogenio	: Risk			Non-Cardi	nogenic Hazard	Quotient	
2011			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	6E-05		1E-05	- 1	7É-05	Skin, CVS	0.4		0.07	0.4
			Cadmium						Kidney	0.002		0.0005	0.002
			Lead						NA NA				0.002
			Benzo(a)pyrene Equivalents	9É-07		8E-07		2E-06	NA NA				
			Arocior-1260	2E-07		2E-07		3E-07	NA NA				
			Chemical Total	6E-05		1E-05		7E-05	1	0.4		0.07	
		Exposure Point Total					'	7E-05	l	1 0.4		0.07	0.4
	Exposure M	Medium Total		****	-			7E-05					0.4
	Air	UXO 32	Arsenic		1E-08		<u> </u>	1E-08	NA NA		0.0005		0.4
			Cadmium		8E-11		i i	8E-11	Kidney		0.0005 0.00001		0.0005 0.00001
			Lead Benzo(a)pyrene Equivalents						NA				0.00001
			Aroclor-1260		1E-11	**		1E-11	NA NA				
			Chemical Total	<u> </u>	4E-12			4E-12	NA NA				
		Exposure Point Total	Chemical Total		1E-08		<u></u>	1E-08			0.0005		0.0005
		ledium Total	· · · · · · · · · · · · · · · · · ·					1E-08					0.0005
Medium Total	Exposure IV	rediditi Total	*. **. **. **. **. **. **. **. **. **.					1E-08					0.0005
Surface Soil (under cap)	Surface Soil (under cap)	1 1000 00	To a second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second seco					7E-05					0.4
direct con (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	4E-06		8E-07		5E-06	NA	0.09		0.02	0.1
	li i		Arsenic	4E-05	,	7E-06		4E-05	Skin, CVS	0.2		0.04	0.3
			Cadmium	• • •		* *			Kidney	0.1		0.02	0.1
			Lead		[NA				
			Mercury						Autoimmune	0.01		0.001	0.01
		1	Zinc				1		Blood	0.01		0.00008	0.01
		,	Aroclor-1260	6E-06		5E-06	4-	1E-05	NA				,,
	İ		Chemical Total	5E-05		1E-05		6E-05		0.4		0.08	0.5
		Exposure Point Total			-			6E-05					0.5
	Exposure M	ledium Total			· · · · · · · · · · · · · · · · · · ·			6E-05					0.5
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-11			9E-11	NA NA	F	0.0000002	 _	0.0000002
			Arsenic		7E-09			7E-09	NA NA		0.000002		
			Cadmium		3E-09]	3E-09	Kidney		i	1	0.0003
			Lead					32-09	NA NA		0.0005	• •	0.0005
			Mercury						CNS, Kidney				
			Zinc						1 1		0.000008		0.000008
		'	Aroclor-1260		1E-10		i		NA 		••		
			Chemical Total		1E-10			1E-10	NA		···		
		Exposure Point Total	Jonathan Total		1E-08			1E-08			0.0008		0.0008
	l l	Exposure Form Fold					1	1E-08				1	0.0008

TABLE 9.2.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	c Risk			Non-Carcin	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Exposur	e Medium Total	•					1E-08					0.0008
Medium Total	,							6E-05		 			0.5
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	4E-06		8E-07		5E-06	NA	0.09	· · ·	0.02	0.1
			Arsenic	7E-05		1E-05		9E-05	Skin, CVS	0.5		0.09	0.6
			Cadmium						Kidney	0,01		0.00	0.02
			. Lead						NA				
			Mercury.						Autoimmune	0.01		0.001	0.01
			Zinc				'		Blood	0.01		0.00008	0.01
			Benzo(a)pyrene Equivalents	9E-07		8E-07		2E-06	NA				
			Aroclor-1260	3E-06		3E-06	- 1	6E-06	NA				
			Chemical Total	8E-05		2E-05		1E-04		0.6		0.11	0.7
		Exposure Point Total						1E-04					0.7
	Exposur	e Medium Total				•		1E-04					0.7
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-11			9E-11	NA	T	0.0000002		0.0000002
			Arsenic		2E-08			2E-08	NA		0.0007		0.0007
			Cadmium		6E-10			6E-10	Kidney		0.00009		0.00009
			Lead						NA				
			Mercury		- •				CNS, Kidney		0.000008		0.000008
		·	Zinc						NA .				
			Benzo(a)pyrene Equivalents		1E-11			1E-11	NA NA				
			Aroclor-1260		6E-11			6E-11	NA.				
		İ	Chemical Total	-	2E-08			2E-08	1		0.0008		0.0008
		Exposure Point Total		1			•	2E-08	1				0.0008
	Exposure Medium Tot	al				******		2E-08					0.0008
Medium Total ·				Ì		·····		1E-04					0.7
Subsurface Soil	Subsurface Soil	UXO 32				Ţ				1			
			Arsenic	6E-05		1E-05		7E-05	Skin, CVS	0.4		0.07	0.4
			Benzo(a)pyrene Equivalents	1E-06		1E-06		2E-06	NA				
			Chemical Total	6E-05		1E-05	 	7E-05	1	0.4		0.07	0.4
		Exposure Point Total						7E-05	1	-4			0.4
	Exposui	re Medium Total			•	· · · · · · · · · · · · · · · · · · ·		7E-05					0.4
	Air	UXO 32	· ' -				1					<u> </u>	
			Arsenic		1E-08			1E-08	NA		0.0005		0.0005
1			Benzo(a)pyrene Equivalents		1E-11		**	1E-11	NA				
ĺ			Chemical Total		1E-08			1E-08	1		0.0005		0.0005

TABLE 9.2.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker Receptor Age: Adult

Medium	Exposure . Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcin	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External	Exposure	Primary	Ingestion	Inhalation	Dermal	Exposure
		Francis Brist Total			<u></u>	<u> </u>	(Radiation)	Routes Total	Target Organ(s)		ł	1	Routes Total
	Exposure Medium Total	Exposure Point Total		<u> </u>				1E-08		*	****		0.0005
Medium Total	Exposure Medicin Total							1E-08					0.0005
Notes:				<u> </u>				7E-05					0.4

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.3.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND

PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	c Risk			Non-Carci	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	3E-05		2E-06		3E-05	Skin, CVS	0.7		0.06	0.8
			Cadmium						Kidney	0.003		0.0004	0.004
		*	Lead			'			NA				
			Benzo(a)pyrene Equivalents	2E-06		8E-07		3E-06	NA				
			Aroclor-1260	8E-08		3E-08]	1E-07	NA				
			Chemical Total	3E-05		3E-06		3E-05		0.7		0.06	0.8
		Exposure Point Total						3E-05					0.8
1	Exposure N	Medium Total .						3E-05					0.8
	Air	UXO 32	Arsenic		3E-10			3E-10	NA		0.00006		0.00006
			Cadmium Lead		2E-12			2E-12	Kidney NA		0.000001		0.000001
			Benzo(a)pyrene Equivalents		1E-12			1E-12	NA NA				
1			Aroclor-1260		9E-14			9E-14	NA NA		*-		
			Chemical Total		3E-10			3E-10			0.00006		.0.00006
		Exposure Point Total				•		3E-10			•	·····	0.00006
	Exposure N	Medium Total						3E-10					0.00006
Medium Total								3E-05					0.8
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	2E-06		2E-07		2E-06	NA	0.2		0.01	0.2
			Arsenic	2E-05		1E-06		2E-05	Skin, CVS	0.4		0.04	0.5
			Cadmium					• •	Kidney	0.1		0.01	0.1
		†	Lead						NA				
			Mercury						Autoimmune	0.02		0.0008	0.02
			Zinc						Blood	0.02		0.00006	0.02
			Aroclor-1260	3E-06		1E-06		4E-06	NA				<u> </u>
			Chemical Total	2E-05		3E-06		2E-05		0.8		0.07	0.8
ļ		Exposure Point Total						2E-05					8.0
	Exposure N	Medium Total						2E-05					0.8
	Air	UXO 32	2,3,7,8-TCDD Equivalents		2E-12			2E-12	NA		0.00000002		0.00000002
			Arsenic		2E-10			2E-10	NA		0.00003	٠.	0.00003
			Cadmium		8E-11		-	8E-11	Kidney		0.00005		0.00005
			Lead				-		· NA				
			Mercury				-		CNS, Kidney		0.0000008		0.0000008
			Zinc			*-	**	- •	NA				
			Aroclor-1260		3E-12			3E-12	NA	••			
	1		Chemical Total		3E-10			3É-10]		0.00008		0.00008
i		Exposure Point Total						3E-10					0.00008

TABLE 9.3.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenie	c Risk			Non-Carci	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External	Exposure	Primary	Ingestion	Inhalation	Dermal	Exposure
				<u> </u>			(Radiation)	Routes Total	Target Organ(s)				Routes Total
Medium Total	Exposur	e Medium Total						3E-10					0.00008
	T	—: _Y :						2E-05					0.8
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	2E-06		2E-07		2E-06	NA	0.2		0.01	0.2
			Arsenic	3E-05		3E-06		4E-05	Skin, CVS	0.9		0.08	1.0
			Cadmium						Kidney	0.02		0.00	0.03
			Lead						NA NA				
			Mercury						Autoimmune	0.02		0.0008	0.02
			Zinc						Biood	0.02		0.00006	0.02
			Benzo(a)pyrene Equivalents	2E-06		8E-07		3E-06	NA NA				
			Aroclor-1260	1E-06		6E-07		2E-06	NA NA				
			Chemical Total	4E-05		4E-06	i i	5E-05		1		0.09	1
		Exposure Point Total						5E-05		<u> </u>		0.00	
	Exposur	e Medium Total				·		5E-05					1
	Air	UXO 32	2,3,7,8-TCDD Equivalents		2E-12			2E-12	NA NA		0.00000002		
			Arsenic		4E-10			4E-10	NA NA		0.00000		0.00000002
			Cadmium		1E-11			1E-11	Kidney		0.00007		0.00007
			Lead				.		NA				0.000010
			Mercury										
			Zinc						CNS, Kidney		0.0000008	• •	0.0000008
			Benzo(a)pyrene Equivalents		1E-12				NA NA			• •	
			Aroclor-1260		2E-12		ł I	1E-12	NA		-		
			Chemical Total		4E-10			2E-12	NA		- "-		
		Exposure Point Total	onemica real	ļ	45-10		<u> </u>	4E-10			0.00008		0.00008
	Exposure Medium Tota	_ 	· · · · · · · · · · · · · · · · · · ·	<u></u>				4E-10					0.00008
fedium Total	T exposure modern rote							4E-10					0.00008
Subsurface Soil	Subsurface Soil	UXO 32				·	 ļ	5E-05					1
	Subsurface con	0.00 32								_			
			Arsenic	3E-05		2E-06		3E-05	Skin, CVS	0.7		0.06	0.8
			Benzo(a)pyrene Equivalents	3E-06		1E-06		4E-06	NA				
			Chemical Total	3E-05		3E-06		3E-05		0.7		0.06	0.8
		Exposure Point Total						3E-05					0.8
	<u> </u>	Medium Total						3E-05					0.8
	Air	UXO 32									T		
			Arsenic		3E-10			3E-10	NA		0.00005		0.00005
			Benzo(a)pyrene Equivalents		2E-12			2E-12	NA				
			Chemical Total		3E-10			3E-10			0.0001		0.0001

TABLE 9.3.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio					nogenic Hazard		
			Concern	Ingestion	Inhalation	Dermal	External	Exposure	Primary	Ingestion	Inhalation	Dermai	Exposure
	1						(Radiation)	Routes Total	Target Organ(s)	<u> </u>			Routes Total
		Exposure Point Total						3E-10					0.0001
	Exposure Medium Total							3E-10					0.0001
Medium Total								3E-05					0.8

Notes

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.4.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	: Risk			Non-Carcin	nogenic Hazard	Quotient	
×			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	1E-05		1E-06		1E-05	Skin, CVS	0.08		0.009	0.09
			Cadmium						Kidney	0.0004		0.00006	0.0004
			Lead						NA NA				
			Benzo(a)pyrene Equivalents	3E-07		2E-07		5E-07	NA NA				
			Aroclor-1260	3E-08		2E-08		5E-08	NA				
			Chemical Total	1E-05		2E-06		1E-05		0.08		0.009	0.09
		Exposure Point Total						1E-05	1				0.09
1	Exposure N	Medium Total						1E-05					0.09
	Air	UXO 32	Arsenic		1E-09		-	1E-09	NA		0.00006		0.00006
i			Cadmium		8E-12			8E-12	Kidney		0.000001		0.000001
			Benzo(a)pyrene Equivalents		2E-12			2E-12	NA NA				
			Aroclor-1260		4E-13			4E-13	NA				
			Chemical Total		1E-09			1E-09			0.00006		0.00006
		Exposure Point Total	- ' 				-	1E-09		L	L	L	0.00006
	Exposure N	Medium Total						1E-09					0.00006
Medium Total			**************************************					1E-05					0.09
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	8E-07		1E-07	T 1	9E-07	NA	0.02	·	0.002	0.02
			Arsenic	7E-06		9E-07		8E-06	Skin, CVS	0.05		0.006	0.05
			Cadmium						Kidney	0.01		0.002	0.02
			Lead						NA NA				
			Mercury						Autoimmune	0.002		0.0001	0.002
			Zinc						Blood	0.002		0.000009	0.002
ı			Aroctor-1260	1E-06		6E-07		2E-06	NA NA				0.002
ı			Chemical Total	9E-06		2E-06		1E-05	1	0.08		0.01	0.09
		Exposure Point Total			·			1E-05				0.01	0.09
	Exposure N	ledium Total					****	1E-05					0.09
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-12			9E-12	NA NA		0.00000002		0.00000002
			Arsenic	-	7E-10			7E-10	NA NA		0.00003		0.00003
			Cadmium		3E-10			3E-10	Kidney	-,	0.00005		0.00003
			Lead			**			NA NA		0.00003		0.00005
			Mercury						CNS, Kidney		0.0000008		i
			Zinc						NA NA				0.0000008
			Aroclor-1260		1E-11		1						
			Chemical Total		1E-11			1E-11	NA I				
		Exposure Point Total	Chemical rotal		15-09		<u> </u>	1E-09			0.00008	• • •	0.00008
	I	Exposure Form Total						1E-09	H				0.00008

TABLE 9.4.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermai	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Roules Total
	Exposur	e Medium Total			·········			1E-09		·			0.00008
Medium Total								1E-05					0.09
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	8E-07		1E-07		9E-07	NA	0.02		0.002	0.02
			Arsenic	1E-05		2E-06	'	2E-05	Skin, CVS	0.10		0.01	0.1
			Cadmium				·		Kidney	0.003		0.0004	0.003
			Lead						NA NA				
			Mercury						Autoimmune	0.002		0,0001	0.002
			Zinc						Blood	0.002		0.000009	0.002
			Benzo(a)pyrene Equivalents	3E-07		2E-07		5E-07	NA.				
			Aroclor-1260	6E-07		3E-07		1E-06	NA NA				:
			Chemical Total	2E-05		2É-06		2E-05]	0.1		0.01	0.1
		Exposure Point Total			,			2E-05					0.1
	Exposu	e Medium Total						2E-05					0.1
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-12			9E-12	· NA	· · ·	0.00000002		0.00000002
			Arsenic		2E-09			2E-09	NA		0.00007		0.00007
			Cadmium		6E-11			6E-11	Kidney		0.000010		0.000010
			Lead						NA NA				
			Mercury		- •				CNS, Kidney		0.0000008		0.0000008
			Zinc						NA				
			Benzo(a)pyrene Equivalents		2E-12			2E-12	NA NA				
			Aroclor-1260		6E-12			6E-12	NA NA				
			Chemical Total		2E-09			2E-09	1		0.00008		0.00008
		Exposure Point Total	######################################	1		·		2E-09		l			0.00008
	Exposure Medium To	tal						2E-09					0.00008
Medium Total						- 		2E-05					0.1
Subsurface Soil	Subsurface Soil	UXO 32								T			
			Arsenic	1É-05		1E-06		1E-05	Skin, CVS	0.07		0.009	0.08
			Benzo(a)pyrene Equivalents	4E-07		2E-07		7E-07	NA				
			Chemical Total	1E-05		2E-06		1E-05]	0.07		0.009	0.08
1		Exposure Point Total					•	1E-05				•	0.08
	Exposu	re Medium Total						1E-05					0.08
	Air	UXO 32											
			Arsenic		1E-09			1E-09	NA NA		0.00005		0.00005
			Benzo(a)pyrene Equivalents		2E-12			2E-12	NA			·	
l	1		Chemical Total		1E-09			1E-09	ור		0.00005		0.00005

TABLE 9.4.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenie	c Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
		Exposure Point Total						1E-09			<u> </u>		
	Exposure Medium Total				· · · · · · · · · · · · · · · · · · ·			1E-09		······			0.00005
ledium Total								1E-05			··		0.08

Notes:

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.5.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 92, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future Receptor Population: Recreational User

Receptor Age: Lifelong

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	: Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	4E-05		4E-06		4E-05		 		<u> </u>	Houtes Total
			Cadmium				_						1
			Lead										
			Benzo(a)pyrene Equivalents	3E-06	**	1E-06		4E-06	ļ]
			Aroclor-1260	1E-07		5E-08		2E-07	1		j		
			Chemical Total	4E-05		5E-06		5E-05	1				
		Exposure Point Total						5E-05	i	l			
		Medium Total						5E-05			- >		
	Air	UXO 32	Arsenic		2E-09			2E-09			T		
		1	. Cadmium Lead		1E-11		i i	1E-11					1
		ļ	Benzo(a)pyrene Equivalents		3E-12			3E-12			.		
			Aroclor-1260		4E-13			3E-12 4E-13					
			Chemical Total		2E-09	<u>-</u>		2E-09					
	L_	Exposure Point Total						2E-09	ļi	L	L <u>.</u>		
	Exposure N	ledium Total						2E-09			· · · · · · · · · · · · · · · · · · ·		
Medium Total		.· .· .· .· .· .· .· .· .· .· .· .· .· .	. 					5E-05		·			
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	3E-06		3E-07		3E-05	<u> </u>				
			Arsenic	2E-05		2E-06		3E-05					
			Cadmium					32-03					
			Lead				.,				j		
			Mercury										
	•		Zinc										
			Aroclor-1260	4E-06		2E-06							
			Chemical Total	3E-05		4E-06		5E-06					- W-24 - W-7
		Exposure Point Total		02 00	1	45-00		3E-05	ļl				
	Exposure M	<u> </u>						3E-05	<u></u>				
	Air	UXO 32	2,3,7,8-TCDD Equivalents	:	1E-11			3E-05	<u></u>	 ,	· · · · · · · · · · · · · · · · · · ·		
			Arsenic		9E-10			1E-11					
			Cadmium		9E-10 4E-10			9E-10					
			Lead		i			4E-10					
			· ·			**		* -					
			Mercury					~ -					
			Zinc					- •					
			Aroclor-1260		1E-11			1E-11					
			Chemical Total		1E-09			1E-09					
	1	Exposure Point Total						1E-09					

TABLE 9.5.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Lifelong

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcin	ogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermat	Exposure Routes Total
	Exposur	e Medium Total						1E-09		<u> </u>		<u> </u>	
Medium Total								3E-05					
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	3E-06		3E-07	- 1	3E-06					
			Arsenic	5E-05		5E-06		5E-05					
			Cadmium										
			Lead										
			Mercury		-					İ			}
		:	Zinc					* •					
			Benzo(a)pyrene Equivalents	3E-06		1E-06		4E-06					1
			Aroclor-1260	2E-06		9E-07	<u> </u>	3E-06 .					
			Chemical Total	6E-05		7E-06		6E-05					
		Exposure Point Total	221/01/2					6E-05			•		
		e Medium Total						6E-05					
	Air	UXO 32	2,3,7,8-TCDD Equivalents		1E-11			1E-11					
			Arsenic		2E-09			2E-09					
			Cadmium		7E-11	*-		7E-11		;			
			Lead				·						
			Mercury										
			Zinc										
			Benzo(a)pyrene Equivalents		3E-12			3E-12					
			Aroclor-1260		8E-12			8E-12					
			Chemical Total		2E-09			2E-09					
•		Exposure Point Total						2E-09					
	Exposure Medium Tot	al						2E-09					
Medium Total								6E-05					
Subsurface Soil	Subsurface Soil	UXO 32]
			Arsenio	4E-05		4E-06		4E-05					
			Benzo(a)pyrene Equivalents	3E-06		1E-06		5E-06					
		=	Chemical Total	4E-05		5E-06		5E-05					
		Exposure Point Total						5E-05					
		e Medium Total						5E-05					
	Air	UXO 32											
			Arsenic		1E-09			1E-09					
			Benzo(a)pyrene Equivalents		4E-12	••		4E-12					
	i		Chemical Total		1E-09			1E-09	ľ				

TABLE 9.5.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Tirneframe: Future Receptor Population: Recreational User Receptor Age: Lifelong

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	Risk			Non-Carcin	ogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Tota
		Exposure Point Total						1E-09		<u> </u>	·		
	Exposure Medium Total							1E-09		······································			
lium Total								5E-05				V	

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.6.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenic	: Aisk	-		Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermai	External (Radiation)	Exposure Routes Total	Primary . Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	2E-04		2E-05		2E-04	Skin, CVS	5		0.4	5
			Cadmium						Kidney	0.02		0.003	0.03
			Lead						NA				
			Benzo(a)pyrene Equivalents	1E-05		5E-06		2E-05	NA				
			Aroclor-1260	5E-07		2E-07		8E-07	NA				
			Chemical Total	2E-04		2E-05		2E-04		5		0.4	5
		Exposure Point Total						2E-04					5
	Exposure N	fedium Total						2E-04					5
	Air	UXO 32	Arsenic		4E-09			4E-09	NA		0.0007		0.0007
			Cadmium		2E-11			2E-11	Kidney		0.00002		0.00002
			Lead Benzo(a)pyrene Equivalents	-:	2E-11			2E-11	NA NA			••	
			Aroclor-1260		1E-12			1E-12	NA NA				
			Chemical Total	 	4E-09		 	4E-09	NA.		0.0007	-	
		Exposure Point Total	ond/incur rotal	<u> </u>	40.03			4E-09	- -	L	0.0007		0.0007
	Exposure M	Medium Total		ļ	——:			4E-09					
Medium Total			**************************************					2E-04					0.0007
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	1E-05		1E-06	T	1E-05	NA NA	1		0.10	1
			Arsenic	1E-04		9E-06	1 1	1E-04	Skin, CVS	3		0.10	3
			Cadmium						Kidney	1		0.10	1
			Lead						NA.			0.10	'
			Mercury					-2	Autoimmune	0.1		0.006	
			Zinc										0,1
			Aroclor-1260	2E-05			1		Blood	0.1		0.0004	0.1
			Chemical Total	1E-04		7E-06	ļ	2E-05	NA			**	
		Exposure Point Total	Chemical Total	15-04	<u> </u>	2E-05		2E-04		5		0.4	6
	Evpoque N	ledium Total		ļ		****		2E-04				····	6
	Air	UXO 32	2,3,7,8-TCDD Equivalents		3E-11		<u> </u>	2E-04	ļ	г	1 0 000005		6
	0"	0,0 32					-	3E-11	NA		0.0000002		0.0000002
		1	Arsenic		2E-09			2E-09	NA.		0.0004		0.0004
			Cadmium	'	9E-10	*-		9E-10	Kidney	* *	0.0006		0.0006
		1	Lead			**	-	• •	NA	· -			
		1	Mercury						CNS, Kidney		0.000010		0.000010
			Zinc					••	NA				
		t	Aroclor-1260		3E-11		-	3E-11	NA NA			•	
			Chemical Total		3E-09			3E-09			0.001		0.001
	1	Exposure Point Total		11				3E-09	1				0.001

TABLE 9.6.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	c Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Tota
	Exposur	e Medium Total						3E-09		_	-		0.001
ledium Total								2E-04					6
urface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	1E-05		1E-06		1E-05	NA	1		0.10	1
			Arsenic	2E-04		2E-05		3E-04	Skin, CVS	6		0.5	7
			Cadmium	1					Kidney	0.2		0.02	0.2
			Lead						NA.				
			Mercury		,				Autoimmune	0.1		0.006	0.1
			Zinc						Blood	0,1		0.0004	0.1
			Benzo(a)pyrene Equivalents	2E-05		6E-06		2E-05	NA			**	
			Aroclor-1260	1E-05		4E-06		1E-05	NA NA				
			Chemical Total	3E-04		3E-05		3E-04]	8		0.6	8
		Exposure Point Total						3E-04					8
	Exposur	e Medium Total						3E-04					8
	Air	UXO 32	2,3,7,8-TCDD Equivalents	-	3E-11			3E-11	NA		0.0000002		0.0000002
			Arsenic		5E-09			5E-09	NA NA		0.0008		0.0008
			Cadmium		2E-10			2É-10	Kidney		0.0001		0.0001
			Lead						NA		**		
			Mercury				1		CNS, Kidney		0.000010		0.000010
			Zinc						NA NA				
			Benzo(a)pyrene Equivalents		2E-11			2E-11	NA NA				
			Aroclor-1260		2E-11			2E-11	NA NA				
			Chemical Total		5E-09			5E-09	1		0.0010		0.0010
		Exposure Point Total		1				5E-09	1			***************************************	0.0010
	Exposure Medium Tot	al	**************************************	1				5E-09		···			0.0010
ledium Total								3E-04		······································			8
Subsurface Soil	Subsurface Soil	UXO 32		i 	1								
			Arsenic	2E-04		2E-05		2E-04	Skin, CVS	5		0.4	5
•			Benzo(a)pyrene Equivalents	2E-05		7E-06		3E-05	NA				-
			Chemical Total	2E-04		2E-05		2E-04	1	5		0.4	5
		Exposure Point Total		1	T.			2E-04	1				5
	Exposur	re Medium Total	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	 				2E-04					5
	Air	UXO 32	<u> </u>	1		T			1	1	1		1
			Arsenic		4E-09			4E-09	NA NA		0.0006		0.0006
			Benzo(a)pyrene Equivalents		2E+11			2E-11	NA.				
			Chemical Total		4E-09			4E-09	∜	·	0.001		0.001

TABLE 9.6.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcin	nogenic Hazard	Quotient	
* **** ****	Exposure Point Total	Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total	
								4E-09		·	<u> </u>	*******	0.001
	Exposure Medium Total							4E-09			457	·	0.001
ledium Total								2E-04					5

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.7.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	8E-05		1E-05		9E-05	Skin, CVS	0.5		0.06	0.6
			Cadmium		'				Kidney	0.002		0.0004	0.003
			Lead						NA				
			Benzo(a)pyrene Equivalents	2E-06		1E-06		3E-06	NA				
			Aroclor-1260	2E-07		1E-07]	4E-07	NA	'			
			Chemical Total	8E-05		1E-05		9E-05		0.5		0.06	0.6
		Exposure Point Total						9E-05			-		0.6
l	Exposure N	Medium Total						9E-05					0.6
	Air	UXO 32	Arsenic		1E-08		(1E-08	NA		0.0007	** :	0.0007
			Cadmium Lead		1E-10		**	1E-10	Kidney		0.00002		0.00002
			Benzo(a)pyrene Equivalents		2E-11		·-	2E-11	NA NA				
			Arocior-1260	·	4E-12			4E-12	NA				
I			Chemical Total		1E-08			1E-08			0.0007		0.0007
1		Exposure Point Total			·	ı		1E-08	-	1			0.0007
	Exposure N	Medium Total			-			1E-08					0.0007
Medium Total								9E-05					0.6
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	5E-06		7E-07		6E-06	NA	0.1		0.01	0.1
			Arsenic	5E-05		6E-06		5E-05	Skin, CVS	0.3		0.04	0.3
			Cadmium	-,-					Kidney	0.09		0.02	0.1
			Lead	٠.					NA				
			Mercury						Autoimmune	0.02		0.0009	0.02
I			Zinc				[Blood	0.02		0.00006	0.02
			Aroclor-1260	8É-06		4E-06		1E-05	NA				
			Chemical Total	6E-05		1E-05		7E-05		0.6		0.07	0.6
1		Exposure Point Total					•	7E-05				\	0.6
I	Exposure N	Medium Total						7E-05					0.6
	Air	UXO 32	2,3,7,8-TCDD Equivalents		1E-10	-		1E-10	NA		0.0000002		0.0000002
			. Arsenic		9E-09			9E-09	NA		0.0004		0.0004
			Cadmium		4E-09			4E-09	Kidney		0.0006		0.0006
			Lead					**	NA NA				
			Mercury						CNS, Kidney	4.	0.000010		0.000010
			Zinc						NA NA				0.000010
			Aroclor-1260		1E-10			1E-10	NA NA				
			Chemical Total		1E-08		1	1E-08			0.001		0.001

TABLE 9.7.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential		·	Carcinogeni	c Risk			Non-Carcii	nogenic Hazard	Quotient	
Ta			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Roules Total
Medium Total	Exposure	Medium Total						1E-08			'		0.001
Surface Soil (future)			- Pr					7E-05		· · · · · · · · · · · · · · · · · · ·			0.6
Surface Soil (luture)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	5E-06		7E-07		6E-06	NA NA	0.1		0.01	0.1
			Arsenic	1E-04		1E-05		1E-04	Skin, CVS	0.7		0.08	0.7
			Cadmium						Kidney	0.02		0.003	0.02
			Lead ·			'			NA.				0.02
		i	Mercury					- 1	Autoimmune	0.02		0.0009	0.02
			Zinc						Blood	0.02		0.00006	0.02
			Benzo(a)pyrene Equivalents	2E-06		1Ë-06		3E-06	NA				0.02
	·		Aroclor-1260	4E-06		2E-06		6E-06	NA NA				
			Chemical Total	1E-04		2E-05		1E-04		0,8		0.10	0.9
		Exposure Point Total						1E-04			L		0.9
		Medium Total						1E-04			 		0.9
	Air	UXO 32	2,3,7,8-TCDD Equivalents		1E-10		T	1E-10	NA NA		0.0000002		0.0000002
			Arsenic		2E-08			2E-08	NA		0.0008		0.0008
			Cadmium		7E-10			7E-10	Kidney		0.0001		
			Lead						NA NA				0.0001
		4	Mercury						CNS, Kidney		0.000010		
			Zinc	**					NA NA		0.000010		0.000010
			Benzo(a)pyrene Equivalents		2E-11			2E-11	NA NA				1
			Aroclor-1260		7E-11		1	7E-11	NA NA				
			Chemical Total		2E-08			2E-08			0.0010		
		Exposure Point Total						2E-08			0.0010		0.0010
	Exposure Medium Total						·	2E-08			· · · · · · · · · · · · · · · · · · ·		0.0010
edium Total								1E-04					0.0010
ubsurface Soil	Subsurface Soil	UXO 32			7.								0.9
			Arsenic	8E-05		9E-06		9E-05	Skin, CVS	0.5		0.06	0.0
			Benzo(a)pyrene Equivalents	3E-06		2E-06		5E-06	NA NA	0.5		0.06	0.6
			Chemical Total	8E-05		1E-05	<u> </u>	9E-05	<u> </u>	0.5		0.06	
		Exposure Point Total					·	9E-05		0.3	l	0.06	0.6
	Exposure	Medium Total						9E-05					0.6
	Air	UXO 32									—		0.6
			Arsenic	,	1E-08			1E-08	NA		0.0000		
•			Benzo(a)pyrene Equivalents		3E-11			3E-11	NA NA		0.0006		0.0006
	1	1	Chemical Total		1E-08			30-11	INA				**

TABLE 9.7.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcir	nogenic Hazard		
			Concern	Ingestion	Inhalation	Dermal	External	Exposure	Primary	Ingestion	Inhalation	Dermai	Exposure
							(Radiation)	Routes Total	Target Organ(s)				Routes Total
		Exposure Point Total						1E-08					0.0006
	Exposure Medium Total							1E-08					0.0006
Medium Total								9E-05					0.6

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.8.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	e Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	3E-04		3E-05	1	3E-04	ranger organis)	 			Roules Total
			Cadmium								l i		İ
			Lead				. [
			Benzo(a)pyrene Equivalents	2E-05		7E-06	1	2E-05	ŧ.			!	
			Aroclor-1260	8E-07		3E-07		1E-06					
			Chemical Total	3E-04		3E-05	 	3E-04					
		Exposure Point Total						3E-04		L			
	Exposure N	Medium Total			***********			3E-04			·		
	Air	UXO 32	Arsenic		2E-08		 	2E-08					
			Cadmium		1E-10			1E-10	i e				
			Lead Benzo(a)pyrene Equivalents		4E-11		-						
		i	Aroclor-1260		4E-11 5E-12			4E-11					
			Chemical Total		2E-08		├─ ─ 	5E-12					
		Exposure Point Total		}J	20.00		I	2E-08		L			
	Exposure N	Medium Total						2E-08					
ledium Total	<u> </u>	- **						2E-08					
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	2E-05		05.00		3E-04					
			Arsenic	2E-03 2E-04		2E-06		2E-05					
			Cadmium	l		2E-05	-	2E-04					
			Lead			٠.	-				i		
	*		Mercury			* *				-			
			Zinc	*-								1	
				**								j	
	_,		Aroclor-1260	3E-05		1E-05		4E-05				i	
			Chemical Total	2E-04		3E-05	L	2E-04					
	Exposure M	Exposure Point Total						2E-04					 ,
	Air		T-22					2E-04					
	All	UXO 32	2,3,7,8-TCDD Equivalents		1E-10			1E-10		·	T		
			Arsenic		1E-08			1E-08				.	
			Cadmium		5E-09			5E-09		Į			
			Lead ·							. [
			Mercury						Í				
			Zinc				**					j	
			Aroclor-1260		2E-10			2E-10	ŀ				
	ı									1			
			Chemical Total		2E-08		[2E-08					

TABLE 9.8 RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenie	: Risk			Non-Carcin	ogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Exposure	Medium Total						2E-08					
Medium Total						····		2E-04					
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	2E-05		2E-06		2E-05				· · · · · · · · · · · · · · · · · · ·	
			Arsenic	3E-04		3E-05		4E-04					İ
			Cadmium										· ·
			Lead										
			Mercury										
			Zinc										
			Benzo(a)pyrene Equivalents	2E-05		7E-06		2E-05		,			
			Aroclor-1260	1E-05		6E-06	,	2E-05					ļ
			Chemical Total	4E-04		5E-05		4E-04					
		Exposure Point Total			·	-		4E-04		L			
	Exposure	Medium Total						4E-04					
	Air	UXO 32	2,3,7,8-TCDD Equivalents		1É-10			1E-10					
•			Arsenic		2E-08			2E-08					
			Cadmium		9E-10			9E-10					
			Lead										
			Mercury										
			Zinc										
			Benzo(a)pyrene Equivalents		4E-11			4E-11					
			Aroclor-1260		9E-11			9E-11					1
			Chemical Total		2E-08			2E-08					
		Exposure Point Total	***************************************					2E-08					
	Exposure Medium Total							2E-08		·			
Medium Total								4E-04					
Subsurface Soil	Subsurface Soil	UXO 32	Aluminum					••					
			Arsenic	3E-04		2E-05		3E-04		,			
			Cobalt							,			
*			Iron			• -		- •	j				
			Manganese					**					
			Vanadium					• •					
			Benzo(a)pyrene Equivalents	2E-05		9E-06		3E-05					
			Chemical Total	3E-04		3E-05		3E-04	ł				
		Exposure Point Total						3E-04					
	Exposure	Medium Total						3E-04					

TABLE 9 8.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	c Risk			Non-Carcin	nogenic Hazard	Quotient			
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Tota		
	Air	UXO 32	Aluminum				-			 			100105 1010		
			Arsenic		1E-08		1.	1E-08							
			Cobalt												
			Iron												
			Manganese												
			Vanadium										•		
			Benzo(a)pyrene Equivalents	-	3E-11			3E-11							
			Chemical Total		1E-08			1E-08							
		Exposure Point Total					·	1E-08			<u></u>				
	Exposure Medium Total							1E-08							
dium Total es:	· · · · · · · · · · · · · · · · · · ·							3E-04	·						

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.9.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Current/Future Receptor Population: Construction Worker

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	: Risk	<u>.</u>		Non-Carcin	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermai	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	8E-06		7E-07		9E-06	Skin, CVS	1		0.1	1
			Cadmium						Kidney	0.01		0.0007	0.01
			Lead			- 1			NA			.:	
			Benzo(a)pyrene Equivalents	1E-07		5E-08		2E-07	NA				
			Arocior-1260	2E-08		1E-08		3E-08	NA				
			Chemical Total	8E-06		8E-07		9E-06		1		0.1	1
		Exposure Point Total						9E-06		·	<u> </u>	L	
I	Exposure N	Medium Total		[******			9E-06	7 # 1		*****	·	1
	Air	UXO 32	Arsenic		1E-06			1E-06	NA		1		1
			Cadmium Lead		7E-09			7E-09	Kidney		0.03		0.03
			Benzo(a)pyrene Equivalents		9E-10			9E-10	NA NA				
		·	Aroclor-1260		3E-10			3E-10	NA ·				
		1	Chemical Total		1E-06			1E-06	1477		1		
	1	Exposure Point Total						1E-06					
	Exposure M	Medium Total						1E-06					1
Medium Total						*****		1E-05					3
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	5E-07		5E-08		6E-07	NA NA	0.3	T	0.03	0.3
			Arsenic	5E-06		4E-07	j	5E-06	Skin, CVS	0.7		0.03	0.3
i ·			Cadmium		;				Kidney	0.2		0.03	0.8
			Lead						NA NA	0.2		l	
			Mercury	<u>.</u> .			<u> </u>		Autoimmune	0.04			
			Zinc						Blood	1		0.002	0.04
		j	Aroclor-1260	7E-07		3E-07		1E-06	NA NA	0.04		0.0001	0.04
ı			Chemical Total	6E-06		8E-07		7E-06	NA NA				
		Exposure Point Total	On of mount of the	UL-00	L	00-07	L			1		0.1	
		ledium Total	~					7E-06					1
	Air	UXO 32	2,3,7,8-TCDD Equivalents		8E-09		7	7E-06			···	·	1
		0.0002	Arsenic		1			8E-09	NA		0.0004	• •	0.0004
			Cadmium		7É-07	4-		7E-07	NA	* *	0.7		0.7
					3E-07			3E-07	Kidney .	• •	1		1
	İ		Lead			**		- •	NA	* *			
			Mercury 						CNS, Kidney	* -	0.02		0.02
			Zinc						NA				
			Aroclor-1260		1E-08			1E-08	NA				
		- 05-1	Chemical Total		1E-06			1E-06			2		2
	1	Exposure Point Total		I				1E-06					2

TABLE 9.9.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

PAGE 2 OF 3

Scenario Timeframe: Current/Future

Receptor Population: Construction Worker

Medium	Exposure Medium	Exposure Point	Chemical of Potential		·	Carcinogenio	: Risk		3	Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External	Exposure	Primary	Ingestion	Inhalation	Dermal	Exposure
	Evposure	Medium Total		<u></u>		-12-	(Radiation)	Routes Total	Target Organ(s)		<u> </u>	<u> </u>	Roules Total
Medium Total	exposure i	viedium rotai						1E-06					2
Surface Soil (future)	Surface Soil (future)	UXO 32	10.0.7.0.70DD F- :		://			8E-06					3
sande con (latare)	Surface Suit (future)	0.00 32	2,3,7,8-TCDD Equivalents	5E-07	400	5E-08		6E-07	NA NA	0.3		0.03	0.3
		i	Arsenic	1É-05		9E-07		1E-05	Skin, CVS	2		0,14	2
			Cadmium		**				Kidney	0.04		0.01	0.0
			Lead						NA NA				
			Mercury						Autoimmune	0.04		0.002	0.04
			Zinc						Blood	0.04		0.0001	0.04
			Benzo(a)pyrene Equivalents	1E-07		5E-08		2E-07	NA				
			Aroclor-1260	4E-07		2E-07		6E-07	NA				
			Chemical Total	1E-05		1E-06		1E-05		2		0.2	2
		Exposure Point Total	- 					1E-05					2
		Medium Total						1E-05					2
	Air	UXO 32	2,3,7,8-TCDD Equivalents		8E-09			8E-09	NA		0.0004		0.0004
			Arsenic		1E-06			1E-06	NA		2		2
			Cadmium		5E-08	**		5E-08	Kidney		0.2		0.2
			Lead						NA		*-		
			Mercury	** .					CNS, Kidney		0.02		0.02
			Zinc	-					NA				
			Benzo(a)pyrene Equivalents	-	9E-10			9E-10	NA				
			Aroclor-1260		6E-09		**	6E-09	NA NA				
			Chemical Total		1E-06			1E-06			2		2
		Exposure Point Total					· · · ·	1E-06					2
	Exposure Medium Total							1E-06					2
ledium Total								1E-05			······································		4
subsurface Soil	Subsurface Soil	UXO 32	Aluminum	4	·- T				CNS	0.02		0.00005	0.02
		*	Arsenic	8É-06		7E-07		8E-06	Skin, CVS	1		0.1	1
			Cobalt						Thyroid	0.02		0.00006	0.02
			Iron						GS	0.04		0.0001	0.02
			Manganese						CNS	0.02		0.001	0.02
			Vanadium						Kidney	0.009		0.00003	0.009
			Benzo(a)pyrene Equivalents	2E-07		6E-08		2E-07	NA	0.005		0.00003	0.009
			Chemical Total	8E-06		7E-07		9E-06	,,,,	1		0.1	1
		Exposure Point Total		i			 	9E-06				0.1	
	Exposure M	fedium Total						9E-06		·			1

TABLE 9.9.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Current/Future Receptor Population: Construction Worker

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcin	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	inhalation	Dermal	Exposure Routes Tot
	Air	UXO 32	Aluminum						CNS		0.2		0.2
			Arsenic		1E-06			1E-06	NA		1		1
			Cobalt		4E-07			4E-07	Respiratory		0.2		0.2
			Iron				-		NA				
			Manganese						CNS		0.4		0.4
			Vanadium						NA NA	2.4	1		
			Benzo(a)pyrene Equivalents		1E-09			1E-09	NA .		,		
			Chemical Total		1E-06			1E-06	1		2		2
		Exposure Point Total			 			1E-06			·		2
	Exposure Medium To	tal						1E-06					2
n Total				ĺ				1É-05					3

Notes:

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.10.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	Risk			Non-Carcii	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Tota
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	6E-05		1E-05		. 7E-05	Skin, CVS	0.4	1	0.07	0.4
			Cadmium						Kidney	0.002		0.0005	0.002
			Lead						NA				
			Benzo(a)pyrene Equivalents	9E-07	**	8E-07		2E-06	NA NA				
			Aroclor-1260	2E-07		2E-07		3E-07	NA				
			Chemical Total	6E-05		1E-05		7E-05		0.4		0.07	0.4
		Exposure Point Total						7E-05	1		·		0.4
	<u> </u>	ledium Total						7E-05					0.4
	Air	UXO 32	Arsenic		1E-08			1E-08	NA NA		0.0005		0.0005
			Cadmium Lead		8E-11		-	8E-11	Kidney		0.00001		0.00001
			Benzo(a)pyrene Equivalents		1E-11		-	1E-11	NA NA				
			Aroclor-1260		4E-12			4E-12	NA NA				
			Chemical Total		1E-08			1E-08	1		0.0005		0.0005
		Exposure Point Total					┸	1E-08	 		0.0003		0.0005
	Exposure M	ledium Total		***				1E-08				·	0.0005
Medium Total								7E-05					0.0005
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	4E-06		8E-07		5E-06	NA NA	0.09		0.02	0.4
			Arsenic	4E-05		7E-06		4E-05	Skin, CVS	0.2		0.02	
			Cadmium .						Kidney	0.1	[.		0.3
			Lead]		NA NA			0.02	0.1
			Mercury						Autoimmune				**
			Zinc							0.01		0.001	0.01
			Aroclor-1260	6E-06]	5E-06		1E-05	Blood	0.01		0.00008	0.01
		4	Chemical Total	5E-05		1E-05	-	6E-05	NA NA				
		Exposure Point Total		02.00		12-03	L	6E-05		0.4	<u></u>	0.08	0.5
	Exposure M	edium Total						6E-05					0.5
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-11			9E-11	<u> </u>				0.5
			Arsenic		7E-09			9E-11 7E-09	NA NA		0.0000002	* -	0.0000002
			Cadmium		3E-09			·	NA I		0.0003		0.0003
			Lead		35-09			3E-09	Kidney	* *	0.0005		0.0005
			Mercury	İ					NA				
			Zinc						CNS, Kidney		0.000008		0.000008
						**			NA NA				
			Arocior-1260		1E-10			1E-10	NA NA				
		-	Chemical Total		1E-08			1E-08	[0.0008		0.0008
	1	Exposure Point Total					i	1E-08					0.0008

TABLE 9.10.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker Receptor Age: Adult

Medium	Exposure - Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carci	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
************	Exposul	re Medium Total						1E-08			' 	<u> </u>	0.0008
Medium Total								6E-05			·	***	0.5
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	4E-06		8E-07		5E-06	NA	0.09		0.02	0.1
			Arsenic	7E-05		1E-05	-	9E-05	Skin, CVS	0.5		0.09	0.6
			Cadmium						Kidney	0.01		0.00	0.02
			Lead		_ i		- 1	• •	. NA			**	
			Mercury		-				Autoimmune	0.01		0.001	0.01
			Zinc						Blood	0.01		0.00008	0.01
			Benzo(a)pyrene Equivalents	9E-07		8E-07		2E-06	NA NA				
			Aroclor-1260	3E-06		3E-06		6E-06	NA				
	1		Chemical Total	8E-05		2E-05		1E-04		0.6		0.11	0.7
		Exposure Point Total						1E-04				·	0.7
		e Medium Total						1E-04					0.7
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-11			9E-11	NA		0.0000002		0.0000002
			Arsenic		2E-08			2E-08	NA		0.0007		0.0007
			Cadmium		6E-10			6E-10	Kidney		0.00009		0.00009
			Lead					• •	NΑ				
			Mercury				-		CNS, Kidney		0.000008		0.000008
			Zinc						, NA				
			Benzo(a)pyrene Equivalents		1E-11			1E-11	NA				
			Aroclor-1260		6E-11		L I	6E-11	NA				
			Chemical Total		2E-08			2E-08			0.0008		0.0008
		Exposure Point Total						2E-08			-		0.0008
	Exposure Medium Tot	al						2E-08					0.0008
Medium Total								1E-04					0.7
Subsurface Soil	Subsurface Soil	UXO 32	Aluminum						CNS	0.005		0.00003	0.005
			Arsenic	6E-05		1E-05		7E-05 ·	Skin, CVS	0.4		0.07	0.4
			Cobalt				1		Thyroid	0.06		0.0004	0.06
			Iron						GS	0.01		0.00009	0.01
			Manganese						CNS	0.005		0.0008	0.006
			Vanadium				**	**	Kidney	0.005		0.00004	0.005
			Benzo(a)pyrene Equivalents	1E-06		1E-06		2E-06	NA				
			Chemical Total	6E-05		1E-05	[7E-05		0.4		0.07	0.5
		Exposure Point Total						7E-05			·		0.5
	Exposur	e Medium Total						7E-05					0.5

TABLE 9.10.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Current/Future Receptor Population: Industrial Worker

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcin	iogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	UXO 32	Aluminum						CNS		0.00007		0.00007
			Arsenic		1E-08			1E-08	NA		0.0005		0.0005
			Cobalt		4E-09			4E-09	Respiratory		0.0002		0.0002
			Iron					* *	NA NA				
			Manganese					9.9	CNS		0.0002		0.0002
			Vanadium						NA				
			Benzo(a)pyrene Equivalents		1E-11			1E-11	NA				
			Chemical Total		2E-08			2E-08	i		0.0010		0.0010
		Exposure Point Total						2E-08		L			0.0010
	Exposure Medium Total							2E-08					0.0010
edium Total					<u> </u>		~~~	7E-05	 	 -			0.5

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.11.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Međium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenii	c Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	3E-05	···	2E-06		3E-05	Skin, CVS	0.7		0.06	0.8
			Cadmium						Kidney	0.003		0.0004	0.004
			Lead						NA				
			Benzo(a)pyrene Equivalents	2E-06		8E-07		3E-06	NA		**		
			Aroclor-1260	8E-08		3E-08		1E-07	NA NA				
			Chemical Total	3E-05		3E-06		3E-05	1	0.7		0.06	0.8
		Exposure Point Total				·		3E-05		d	'		0.8
i	Exposure N	Medium Total					, , , , , , , , , , , , , , , , , , , ,	3E-05					0.8
	Air	UXO 32	Arsenic	-	3E-10	-		3E-10	NA NA		0.00006		0.00006
			Cadmium Lead		2E-12			2E-12	Kidney		0.000001		0.000001
			Benzo(a)pyrene Equivalents		1E-12			1E-12	NA NA				
			Aroclor-1260		9E-14			9E-14	NA NA				
			Chemical Total		3E-10		T	3E-10	1	·-··	0.00006		0.00006
		Exposure Point Total	——————————————————————————————————————	i	1	·		3E-10	1	<u> </u>			0.00006
	Exposure N	Medium Total	-4-5-14- · · · · · · · · · · · · · · · · · · ·					3E-10					0.00006
Medium Total		**************************************	— :: ·····	ì	******	·		3E-05					0.8
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	2E-06	-	2E-07	1	2E-06	NA	0.2		0.01	0.2
			Arsenic	2E-05		1E-06		2E-05	Skin, CVS	0.4		0.04	0.5
			Cadmium						Kidney	0.1		0.01	0.1
			Lead						NA NA		* -		
			Mercury						Autoimmune	0.02		0.0008	0.02
			Zinc						Blood	0.02		0.00006	0.02
			Aroclor-1260	3E-06		1E-06	-	4E-06	NA NA				
{			Chemical Total	2E-05		3E-06	1	2E-05	1	0.8		0.07	0.8
		Exposure Point Total		ļ	l		-d	2E-05					0.8
	Exposure N	Medium Total						2E-05				~	0.8
	Air	UXO 32	2,3,7,8-TCDD Equivalents		2E-12		T	2E-12	NA		0.00000002		0.00000002
			Arsenic		2E-10			2E-10	NA NA		0.00003		0.00003
			Cadmium		8E-11	- '		8E-11	Kidney		0.00005		0.00005
			Lead						NA NA				
			Mercury						CNS, Kidney		0.0000008		0.0000008
			Zinc						NA NA				
			Aroclor-1260		3E-12			3E-12	NA NA				
			Chemical Total		3E-10		 	3E-10	1		0.00008		0.00008
il .	I .				1			30.00	<u></u>	1	1 0.00000	I	0.00000

TABLE 9.11.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carci	nogenic Hazard	Quolient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermai	Exposure Routes Total
	Exposure	e Medium Total						3E-10			· · · · · · · · · · · · · · · · · · ·	·	0.00008
Medium Total								2E-05					0.8
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	2E-06		2E-07	T	2E-06	NA	0.2		0.01	0.2
			Arsenic	3E-05		3E-06		4E-05	Skin, CVS	0.9		0.08	1.0
			Cadmium						Kidney	0.02		0.00	0.03
•			Lead					- •	NA NA				
			Mercury						Autoimmune	0.02		0.0008	0.02
			Zinc ·						Blood	0.02		0.00006	0.02
			Benzo(a)pyrene Equivalents	2E-06		8E-07		3E-06	NA NA				
			Aroclar-1260	1E-06		6E-07		2E-06	NA				
			Chemical Total	4E-05		4E-06		5E-05		1		0.09	1
		Exposure Point Total				-		5E-05					1
	Exposure	e Medium Total						5E-05					1
	Air	UXO 32	2,3,7,8-TCDD Equivalents		2E-12			2E-12	NA NA		0.00000002		0.00000002
			Arsenic		4E-10			4E-10	NA		0.00007		0.00007
			Cadmium		1E-11			1E-11	Kidney		0.000010		0.000010
			Lead						NA	* -		- •	'
			Mercury						CNS, Kidney		0.0000008		0.0000008
			Zinc						NA				
			Benzo(a)pyrene Equivalents		1E-12			1E-12	NA NA				
			Aroclor-1260		2E-12			2E-12	NA				
			Chemical Total]	4E-10			4E-10			0.00008		0.00008
		Exposure Point Total						4E-10		· · · · · · · · · · · · · · · · · · ·			0.00008
	Exposure Medium Tota	1						4E-10			**		0.00008
Medium Total								5E-05					1
Subsurface Soil	Subsurface Soil	UXO 32	Aluminum						CNS	0.009		0.00003	0.009
			Arsenic	3E-05		2E-06		3E-05	Skin, CVS	0.7		0.06	0.8
	}		Cobalt						Thyroid	0.1		0.0003	0.1
			Iron						GS	0.03		0.00007	0.03
			Manganese						CNS	0.010		0.0007	0.01
			Vanadium .		'		'		Kidney	0.01		0.00003	0.01
			Benzo(a)pyrene Equivalents	3E-06		1E-06		4E-06	NA				
		N	Chemical Total	3E-05		3E-06	- 1	3E-05		0.9		0.06	0.9
		Exposure Point Total						3E-05			<u> </u>		0.9
	Exposure	Medium Total						3E-05			·		0.9

TABLE 9.11.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	: Risk			Non-Carcir	nogenic Hazard	Quotient	•
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure . Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
· · · · · · · · · · · · · · · · · · ·	Air	UXO 32	Aluminum						CNS		0.000007		0.000007
			Arsenic		3E-10			3E-10	NA NA		0.00005		0.00005
			Cobalt		1E-10			1E-10	Respiratory		0.00002		0.00002
			Iron						NA				
			Manganese						CNS		0.00002		0.00002
			Vanadium					ļ	NA				
			Benzo(a)pyrene Equivalents		2E-12			2E-12	NA NA				
			Chemical Total		4E-10			.4E-10	1		0.0001		0.0001
		Exposure Point Total			•			4E-10					0,0001
	Exposure Medium Total	•						4E-10					0.0001
ledium Total		•						3E-05					0.9

Notes

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.12.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carci	nogenic Hazard	Quotient	
Surface Soil (current)			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
burrace Soil (current)	Surface Soil (current)	UXO 32	Arsenic	1E-05		1E-06		1E-05	Skin, CVS	0.08		0.009	0.09
			Cadmium						Kidney	0.0004		0.00006	0.0004
			Lead						NA NA			2.0000	0.0004
			Benzo(a)pyrene Equivalents	3E-07		2E-07		5E-07	NA NA				
			Aroclor-1260	3E-08		2E-08		5E-08	NA NA				
			Chemical Total	1E-05		2E-06	· · · · · · · · · · · · · · · · · · ·	1E-05	1	0.08	· · · · · ·	0.009	
		Exposure Point Total			·		·	1E-05	╬	0.00		0.009	0.09
	Exposure N	Medium Total				·····		1E-05					0.09
	Air	UXO 32	Arsenic		1É-09			1E-09	NA NA		0.00006	T	0.09
			Cadmium		8E-12			8E-12	Kidney		0.000001		0.00006 0.000001
			Lead Benzo(a)pyrene Equivalents						NA				
			Aroclor-1260	 	2E-12 4E-13		-	2E-12	NA NA				
		İ	Chemical Total		1E-09		 	4E-13	NA				
		Exposure Point Total			12-09		<u> </u>	1E-09			0.00006		0.00006
	Exposure N	Medium Total				 %		1E-09		T17 Jan			0.00006
Medium Total								1E-09					0.00006
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	8E-07		45.07		1E-05		,,, a ,,ts.			0.09
	, , , , , , , , , , , , , , , , , , , ,	0.00 02	Arsenic			1E-07	==	9E-07	NA I	0.02		0.002	0.02
			1	7E-06		9E-07	-]	8E-06	Skin, CVS	0.05		0.006	0.05
		· ·	Cadmium		~	* *	"		Kidney	0.01		0.002	0.02
			Lead					• •	NA NA	~*			
			Mercury						Autoimmune	0.002		0.0001	0.002
		ı	Zinc			* *	-		Blood	0.002		0.000009	0.002
			Arocior-1260	1E-06		6E-07		2E-06	NA NA				
			Chemical Total	9E-06		2E-06	L T	1E-05		0.08		0.01	0.09
		Exposure Point Total						1E-05					0.09
		fedium Total						1E-05					0.09
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-12			9E-12	NA		0.00000002	···	0.00000002
			Arsenic		7E-10			7E-10	NA		0.00003		0.00003
			Cadmium		3E-10	'		3E-10	Kidney		0.00005		0.00005
			Lead	**					NA NA		0.00003		
			Mercury						CNS, Kidney		0.0000008	i	
			Zinc						NA NA				0.0000008
	}		Aroclor-1260		1E-11						*-		
			Chemical Total		1E-09			1E-11	NA				
		Exposure Point Total			12-03			1E-09			0.00008		0.00008
	•							1E-09				i i	0.00008

TABLE 9.12.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential		T , , ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	Carcinogenio	.,			,	nogenic Hazard		·
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Exposur	e Medium Total						1E-09					0.00008
Medium Total								1E-05					0.09
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	8E-07		1E-07		9E-07	NA	0.02		0.002	0.02
			Arsenic	1E-05		2E-06		2E-05	Skin, CVS	0.10		0.01	0.1
			Cadmium						Kidney	0.003		0.0004	0.003
			Lead				-		NA				
			Mercury						Autoimmune	0.002		0.0001	0.002
			Zinc						Blood	0.002		0.000009	0.002
			Benzo(a)pyrene Equivalents	3E-07		2E-07		5E-07	NA NA				
			Aroclor-1260	6E-07		3E-07		1E-06	NA NA				
			Chemical Total	2E-05		2E-06		2E-05		0.1		0.01	0.1
		Exposure Point Total						2E-05					0.1
	Exposur	e Medium Total						2E-05					0.1
	Air	UXO 32	2,3,7,8-TCDD Equivalents		9E-12			9E-12	NA		0.00000002		0.00000002
			Arsenic		2E-09			2E-09	NA NA		0.00007		0.00007
			Cadmium		6E-11			6E-11	Kidney		0.000010		0.000010
			Lead						NA '				
			Mercury						CNS, Kidney		0.0000008		0.0000008
			Zinc						NA NA				
			Benzo(a)pyrene Equivalents		2E-12			2E-12	NA NA				
			Aroclor-1260		6E-12			6E-12	NA				
			Chemical Total		2E-09		- 1	2E-09	1		0.00008		0.00008
		Exposure Point Total		1	··		·	2E-09			•	·	0.00008
	Exposure Medium Tot	al						2E-09		.!!			0.00008
Medium Total								2E-05					0.1
Subsurface Soil	Subsurface Soil	UXO 32	Aluminum						CNS	0.0010	· -	0.000004	0.0010
			Arsenic	1E-05		1E-06		1E-05	Skin, CVS	0.07		0.009	0.08
			Cobalt						Thyroid	0.01		0.00005	0.01
			Iron				**		GS	0.003		0.00001	0.003
			Manganese						CNS	0.001		0.0001	0.001
			Vanadium						Kidney	0.001	·	0.000004	0.001
			Benzo(a)pyrene Equivalents	4E-07		2E-07		7E-07	NA NA				
		-	Chemical Total	1E-05		2E-06		1E-05	i ·	0.09		0.009	0.1
		Exposure Point Total		1		1	1	1E-05	1	1	·		0.1
	Evnosiii	re Medium Total		 				1E-05	Ĭ				0.1

TABLE 9.12.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Roules Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	UXO 32	Aluminum				T		CNS		0.000007		0.000007
			Arsenic		1E-09			1E-09	NA NA		0.00005		0.00005
			Cobalt		4E-10			4E-10	Respiratory		0.00002	**	0.00002
	*		Iron				-		NA				
		1	Manganese					* *	CNS		0.00002		0.00002
			Vanadium						NA				
		,	Benzo(a)pyrene Equivalents		2E-12			2E-12	NA NA				
			Chemical Total		2E-09	-		2E-09			0.0001		0.0001
		Exposure Point Total						2E-09		<u> </u>			0.0001
	Exposure Medium Total						ì	2E-09					0.0001
edium Total								1E-05					0.0001

1 - Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.13.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Lifelong

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	Risk			Non-Carcin	ogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soll (current)	UXO 32	Arsenic	4E-05	-	4E-06		4E-05					
			Cadmium										
			Lead					• •					
			Benzo(a)pyrene Equivalents	3E-06		1E-06		4E-06				1	
			Aroclor-1260	1E-07		5E-08	-	2E-07					
			Chemical Total	4E-05		5E-06		5E-05					
		Exposure Point Total	······································					5E-05					
	Exposure M	Medium Total						5É-05					
	Air	UXO 32	Arsenic		2E-09			2E-09					
			Cadmium Lead		1E-11			- 1E-11		1	1		
			Benzo(a)pyrene Equivalents		3E-12			3E-12					
		,	Aroclor-1260		4E-13			4E-13	 	,			
		ì	Chemical Total	-	2E-09	-	- 1	2E-09	1				
1	· ·	Exposure Point Total	/	i	L	L		2E-09	1	1	•	l	
1	Exposure N	fedium Total						2E-09					
Medium Total			•					5E-05		 	444-4		
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	3E-06		3E-07		3E-06					
			Arsenic	2E-05		2E-06		3E-05	ı				
			Cadmium						1				
			Lead		*-								
		+	Mercury										
			Zinc										
			Aroclor-1260	4E-06		2E-06		5E-06					
			Chemical Total	3E-05		4E-06		3E-05	1				
II .			ijonemicai rotai	3E-05		72 00							
		Exposure Point Total	Chemical rotal	3E-05		L		3E-05	1				
	Exposure N	Exposure Point Total	Chemical Fotal	3E-05		1 72 00						·····	
	Exposure N		2,3,7,8-TCDD Equivalents	36-05	1E-11	L		3E-05				<u> </u>	
		Medium Total			1E-11 9E-10			3E-05 3E-05					
		Medium Total	2,3,7,8-TCDD Equivalents					3E-05 3E-05 1E-11					
		Medium Total	2,3,7,8-TCDD Equivalents Arsenic		9E-10			3E-05 3E-05 1E-11 9E-10					
		Medium Total	2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead		9E-10 4E-10			3E-05 3E-05 1E-11 9E-10 4E-10					
		Medium Total	2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury		9E-10 4E-10		 	3E-05 3E-05 1E-11 9E-10 4E-10					
		Medium Total	2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury Zinc		9E-10 4E-10 	 		3E-05 3E-05 1E-11 9E-10 4E-10					
		Medium Total	2,3,7,8-TCDD Equivalents Arsenic Cadmium Lead Mercury		9E-10 4E-10			3E-05 3E-05 1E-11 9E-10 4E-10					

TABLE 9.13.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND

IXO 32, INDIAN HEAD, MARYLANI PAGE 2 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Lifelong

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	c Risk			Non-Carcii	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Exposure	Medium Total			•			1E-09					
Medium Total	,,							3E-05				<u> </u>	· · · · · · · · · · · · · · · · · · ·
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	3E-06		3E-07		3E-06					
			Arsenic	5E-05		5E-06		5E-05					
			Cadmium								1		
			Lead										
			Mercury				- 1						
			Zinc									Ì	
			Benzo(a)pyrene Equivalents	3E-06		1E-06		4E-06					
			Aroclor-1260	2E-06		9E-07	:	3E-06					
			Chemical Total	6E-05		7E-06		6E-05]				
		Exposure Point Total						6E-05			•		
	Exposure	Medium Total						6E-05					
	Air	UXO 32	2,3,7,8-TCDD Equivalents	-	1E-11			1E-11					
			Arsenic		2E-09		'	2E-09		1			
			Cadmium		7E-11			7E-11					l
		ļ	Lead			**							
			Mercury										
			Zinc				**						
		i	Benzo(a)pyrene Equivalents		3E-12			3E-12					
			Arocior-1260		8E-12			8E-12					
			Chemical Total		2E-09			2E-09	1				
		Exposure Point Total						2E-09				•	
	Exposure Medium Tota	ıl						2E-09					
Medium Total								6E-05					
Subsurface Soil	Subsurface Soil	UXO 32	Aluminum										
			Arsenic	4E-05		4E-06		4E-05	1	ŀ		ļ	
			Cobalt .									ŀ	
			Iron										
			Manganese		-				1				
			Vanadium										
			Benzo(a)pyrene Equivalents	3E-06	**.	1E-06		5E-06	_				
			Chemical Total	4E-05	-	5E-06		5E-05					
		Exposure Point Total						5E-05					
	Exposure	Medium Total						5E-05					

TABLE 9.13.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Scenario Timeframe: Future

Receptor Population: Recreational User

Receptor Age: Lifelong

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Tol
	Air	UXO 32	Aluminum							1 2, 1			
			Arsenic		1E-09			1E-09	i			1	
			Cobalt		5E-10			5E-10		ļ		1	1
			Iron					- •	İ				
			Manganese						1	1			
			Vanadium			,							
		1	Benzo(a)pyrene Equivalents		4E-12	**		4E-12					
			Chemical Total		2E-09			2E-09					
		Exposure Point Total						2E-09			• • • • • • • • • • • • • • • • • • • •		
	Exposure Medium Total		V-14-1					2E-09					
ium Total								5E-05					1

Notes

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.14.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND

PAGE 1 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	Risk			Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	2E-04		2E-05	1	2E-04	Skin, CVS	5		0.4	5
			Cadmium						Kidney	0.02		0.003	0.03
			. Lead			+ -			NA				
			Benzo(a)pyrene Equivalents	1E-05		5E-06		2E-05	NA				
			Aroclor-1260	5E-07		2E-07	- 1	8E-07	NA			**	
	,		Chemical Total	2E-04		2E-05		2E-04	1	5		0.4	5
		Exposure Point Total					·	2E-04	<u> </u>		·		5
	Exposure N	Medium Total						2E-04					5
	Air	UXO 32	Arsenic		4E-09		- 1	4E-09	NÁ		0.0007	· · · · · · ·	0.0007
			Cadmium Lead		2E-11			2E-11	Kidney		0.00002	• •	0.00002
			Benzo(a)pyrene Equivalents		2E-11		"	2E-11	NA NA				
			Aroclor-1260		1E-12			1E-12	NA NA				
			Chemical Total		4E-09			4E-09	1		0.0007		0.0007
		Exposure Point Total		-				4E-09	· · · · · · · · ·	l			0.0007
	Exposure N	Medium Total						4E-09					0.0007
Medium Total			***************************************				·	2E-04					5
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	1E-05	-	1E-06		1E-05	NA	1		0.10	1
		*	Arsenic	1E-04		9E-06		1E-04	Skin, CVS	3		0.2	3
			Cadmium						Kidney	1		0.10	1
			Lead						NA NA				
			Mercury						Autoimmune	0.1		0.006	0.1
			Zinc						Blood-	0.1		0.0004	0.1
			Aroclor-1260	2E-05		7E-06		2E-05	NA			*-	
			Chemical Total	1E-04		2E-05	- 1	2E-04	1	5		0.4	6
		Exposure Point Total					<u> </u>	2E-04	1		١		6
		Medium Total						2E-04					6
	Air	UXO 32	2,3,7,8-TCDD Equivalents		3E-11			3E-11	NA		0.0000002		0.0000002
			Arsenic		2E-09	••		2E-09	NA		0.0004		0.0004
		1	Cadmium		9E-10			9E-10	Kidney		0.0006		0.0006
· ·			Lead						. NA				
		1	Mercury						CNS, Kidney		0.000010		0.000010
		1	Zinc						NA				
			Aroclor-1260		3E-11			3E-11	NA NA				
			Chemical Total		3E-09			3E-09	1		0.001		0.001

TABLE 9.14.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Scenario Timeframe: Future Receptor Population: Resident

Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogenio	c Risk		F 17	Non-Carcin	ogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Exposure	Medium Total			·		-,	3E-09					0.001
Medium Total								2E-04					6
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	1E-05		1E-06	-	1E-05	NA	1		0.10	1
			Arsenic	2E-04		2E-05		3E-04	Skin, CVS	6	1.	0.5	7
		1	Cadmium						. Kidney	0.2		0.02	0.2
			Lead						NA	**			
			Mercury						Autoimmune	0.1		0.006	0.1
			Zinc						Blood	0.1		0.0004	0.1
			Benzo(a)pyrene Equivalents	2E-05		6E-06		2E-05	NA NA			**	
			Aroclor-1260	1E-05		4E-06		1E-05	NA			**.	
			Chemical Total	3E-04		3E-05		3E-04	<u>]</u>	8		0.6	8
		Exposure Point Total						3E-04					8
	Exposure	e Medium Total	**************************************					3E-04					8
	Air	UXO 32	2,3,7,8-TCDD Equivalents		3E-11			3E-11	. NA		0.0000002		0.0000002
			Arsenic		5E-09			5E-09	NA		0.0008		0.0008
-			Cadmium		2E-10			2E-10	Kidney		0.0001		0.0001
			Lead						NA NA				
			Mercury				-		CNS, Kidney		0.000010		0.000010
ŀ			Zinc						NA				
			Benzo(a)pyrene Equivalents		2E-11			2E-11	NA NA				
			Aroclor-1260		2E-11			2E-11	NA	* -			
			Chemical Total	1	5E-09			5E-09]		0.0010		0.0010
		Exposure Point Total		1				5E-09					0.0010
#	Exposure Medium Tot	al						5E-09					0.0010
Medium Total								3E-04					8
Subsurface Soil	Subsurface Soil	UXO 32	Aluminum		T	T		1	CNS	0.06		0.0002	0.06
			Arsenic	2E-04		2E-05		2E-04	Skin, CVS	5		0.4	5
			Cobalt						Thyroid	0.8		0.002	0.8
1			Iron						GS	0.2		0.0005	0.2
ľ			Manganese						CNS	0.06		0.005	0.07
			Vanadium						Kidney	0.07		0.0002	0.07
			Benzo(a)pyrene Equivalents	2E-05	1	7E-06		3E-05	NA				
			Chemical Total	2E-04	<u> </u>	2E-05	·	2E-04		6		0.4	6
		Exposure Point Total			- In.,			2E-04					6
	Fynogui	re Medium Total						2E-04		2,-12,12,-1			6

TABLE 9.14.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni	c Risk			Non-Carcin	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Roules Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Air	UXO 32	Aluminum						CNS		0.00008		0.00008
			Arsenic		4E-09			4E-09	NA		0.0006		0.0006
			Cobalt		1E-09		'	1E-09	Respiratory		0.0003		0.0003
			Iron .						NA				
			Manganese						CNS		0.0002		0.0002
			Vanadium						NA NA				
			Benzo(a)pyrene Equivalents		2E-11			2E-11	NA				
			Chemical Total		5E-09			5E-09			0.001		0.001
		Exposure Point Total						5E-09					0.001
	Exposure Medium Tota	al						5E-09					0.001
ım Total								2E-04					

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.15 RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogeni				Non-Carcir	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	8E-05		1E-05		9E-05	Skin, CVS	0.5		0.06	0.6
			Cadmium	• -					Kidney	0.002		0.0004	0.003
			Lead				1		NA				
			Benzo(a)pyrene Equivalents	2E-06		1E-06		3E-06	NA	:-			
			Aroclor-1260	2E-07		1E-07	1 1	4E-07	NA				
			Chemical Total	8E-05		1E-05		9E-05		0.5		0.06	0.6
		Exposure Point Total						9E-05					0.6
		Medium Total						9E-05					0.6
	Air	UXO 32	Arsenic		1E-08			1E-08	NA NA		0.0007		0.0007
			Cadmium Lead		1E-10			1E-10	Kidney		0.00002		0.00002
			Benzo(a)pyrene Equivalents		2E-11			2E-11	NA NA			4.0	
			Arocior-1260		4E-12			4E-12	NA NA				
			Chemical Total		1E-08		 	1E-08	194		0.0007	•	
		Exposure Point Total						1E-08			0.0007		0.0007
	Exposure N	Medium Total	****					1E-08					0.0007
Medium Total		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					9E-05					0.0007
Surface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	5E-06		7E-07	T	6E-06	NA NA				0.6
			Arsenic	5E-05		6E-06		5E-05	Skin, CVS	0.1		0.01	0.1
			Cadmium			02.00		5E-03		0.3	• •	0.04	0.3
			Lead				"		Kidney	0.1		0.02	0.1
			Mercury						NA NA				
			Zinc				"		Autoimmune	0.02		0.0009	0.02
			Aroclor-1260	8E-06			, "		Blood	0.02	* *	0.00006	0.02
			Chemical Total	6E-05		4E-06		1E-05	NA				
		Exposure Point Total	Chemical Folds	0E-05		1E-05	L	7E-05		0.6		0.07	0.6
	Exposure M	Medium Total						7E-05					0.6
	Air	UXO 32	2,3,7,8-TCDD Equivalents		45.40		, 	7E-05					0.6
		0.00 52	Arsenic	- :	1E-10		-	1E-10	NA		0.0000002		0.0000002
	1		Cadmium		9E-09	**	-	9E-09	NA		0.0004		0.0004
					4E-09			4E-09	Kidney	** .	0.0006		0.0006
		1	Lead			**			NA .				**
			Mercury						CNS, Kidney		0.000010		0.000010
			Zinc				**		NA				
			Aroclor-1260		1E-10			1E-10	NA				
			Chemical Total		1E-08			1E-08			0.001		0.001
	I	Exposure Point Total		l				1E-08					0.001

TABLE 9.15.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential		,	Carcinogeni	: Risk			Non-Carcinogenic Hazard Quotient			
			Concern	Ingestion	Inhalation	Dermal	External	Exposure	Primary	Ingestion	Inhalation	Dermal	Exposure
	Exposure	Medium Total		 	<u></u>		(Radiation)	Routes Total	Target Organ(s)				Routes Total
Medium Total				ļ				1E-08					0.001
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	5E-06				7E-05					0.6
			Arsenic	1E-04		7E-07	-	6E-06	NA	0.1		0.01	0.1
			Cadmium	ii .	**	1E-05	- [1E-04	Skin, CVS	0.7		0.08	0.7
			Lead						Kidney	0.02		0.00	0.02
					**		-		NA NA				
			Mercury				[• •	Autoimmune	0.02		0.0009	0.02
		1	Zinc						Blood	0.02		0.00006	
			Benzo(a)pyrene Equivalents	2E-06		1E-06		3E-06	NA			0.00000	0.02
			Aroclor-1260	4E-06		2E-06		6E-06	NA				
			Chemical Total	1E-04		2E-05		1E-04	1	0.8			
		Exposure Point Total						1E-04	 	0.0		0.10	0.9
		Medium Total						1E-04					0.9
	Air	UXO 32	2,3,7,8-TCDD Equivalents		1E-10			1E-10	NA NA				0.9
			Arsenic		2E-08			2E-08	4		0.0000002		0.0000002
		·	Cadmium		7E-10			7E-10	NA NA	**	0.0008	٠.	0.0008
			Lead	[Kidney	* -	0.0001		0.0001
			Mercury.						NA				
			Zinc				- 1		CNS, Kidney		0.000010		0.000010
	·		Benzo(a)pyrene Equivalents		2E-11				NA				
			Arocior-1260	1	1		**	2E-11	NA				
			Chemical Total		7E-11			7E-11	NA NA				
		Exposure Point Total	Onemical rotal		2E-08			2E-08			0.0010		0.0010
	Exposure Medium Total	Taribara Cart Votal						2E-08					0.0010
edium Total		······································						2E-08					0.0010
ibsurface Soil	Subsurface Soil	UXO 32	Talimi	 _				1E-04					0.9
		0.00.02	Aluminum						CNS	0.007		0.00003	0.007
			Arsenic	8E-05		9E-06		9E-05	Skin, CVS	0.5		0.06	0.6
			Cobalt						Thyroid	0.09		0.0003	
			Iron						GS	0.02		į.	0.09
			Manganese						CNS	0.007		0.00008	0.02
			Vanadium						Kidney	0.007		0.0007	0.008
		1	Benzo(a)pyrene Equivalents	3E-06		2E-06		5E-06	1			0.00003	0.008
			Chemical Total	8E-05		1E-05		9E-05	NA				
		Exposure Point Total							,,,	0.6		0.06	0.7
	Exposure N	Exposure Medium Total				 -		9E-05	·				0.7
								9E-05					0.7

TABLE 9.15.RME

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs REASONABLE MAXIMUM EXPOSURES

UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Medium	Exposure Medium		Chemical of Potential Concern		. Carcinogenic Alsk					Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Tota
	Air	UXO 32	Aluminum						CNS		0.00008		0.00008
			Arsenic		1E-08			1E-08	NA		0.0006		0.0006
			Cobalt		5E-09			5E-09	Respiratory		0.0003		0.0003
			Iron :						NA				
			Manganese						CNS		0.0002		0.0002
			Vanadium						NA		**		
			Benzo(a)pyrene Equivalents	=	3E-11			3E-11	NA				
			Chemical Total		2E-08			2E-08	1		0.001		0.001
		Exposure Point Total						2E-08	1	·	1		0.001
	Exposure Medium Tota	1)						2E-08				<u>*</u>	0.001
um Total	<u> </u>					· · · · · · · · · · · · · · · · · · ·		9E-05	i				0.7

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

TABLE 9.16.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 1 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential		,	Carcinogenio	Risk	·		Non-Carcin	nogenic Hazard	Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
urface Soil (current)	Surface Soil (current)	UXO 32	Arsenic	3E-04	-	3E-05		3E-04					
			Cadmium										
			Lead						l .				
			Benzo(a)pyrene Equivalents	2E-05]	7E-06		2E-05	{				
			Aroclor-1260	8E-07		3E-07		1 É-06	1				
			Chemical Total	3E-04		3E-05		3E-04	1		1		
		Exposure Point Total						3E-04		·			
	Exposure N	Medium Total						3E-04				,	
	Air	UXO 32	Arsenic		2E-08			2E-08					Searce
			Cadmium Lead		1E-10			1E-10					
			Benzo(a)pyrene Equivalents		4E-11			4E-11					
			Aroclor-1260		5E-12			5E-12					
			Chemical Total		2E-08			2E-08	i				
		Exposure Point Total						2E-08				<u> </u>	
	Exposure N	Medium Total					* **	2E-08		*	20/E/c/	• • •	
edium Total								3E-04					
urface Soil (under cap)	Surface Soil (under cap)	UXO 32	2,3,7,8-TCDD Equivalents	2E-05		2E-06	1	2E-05					
			Arsenic	2E-04		2E-05		2E-04					
			Cadmium										
			Lead					'	`				
			Mercury										
			Zinc										
			Arocior-1260	3E-05	~*	1E-05		4E-05					
			Chemical Total	2E-04		3E-05	٠٠ آ	2E-04	j				
		Exposure Point Total						2E-04				· · · · · · · · · · · · · · · · · · ·	
	Exposure N	Medium Total				-/		2E-04		• • • • • • • • • • • • • • • • • • • •			
	Air	UXO 32	2,3,7,8-TCDD Equivalents		1E-10			1E-10					
			Arsenic		1E-08			1E-08					
			Cadmium		5E-09			5E-09					
•			Lead	**]
			Mercury										
			Zinc										
			Aroclor-1260		2E-10			2E-10					
			Chemical Total		2E-08			2E-08	i				
	1	Exposure Point Total		1		-	·	2E-08	 	L	<u> </u>		

TABLE 9.16.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 2 OF 3

Medium	Exposure Medium	Exposure Point	Chemical of Potential			Carcinogen	ic Risk			Non-Carcir	nogenic Hazard	d Quotient	
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure
10- 11	Exposure	Medium Total						2E-08	rarget Organ(s)		<u> </u>	<u> </u>	Routes Tota
Medium Total								2E-04					
Surface Soil (future)	Surface Soil (future)	UXO 32	2,3,7,8-TCDD Equivalents	2E-05	<u> </u>	2E-06	- I	2E-05			T		<u> </u>
			Arsenic	3E-04		3E-05		4E-04					1
			Cadmium										
			Lead				l						
			Mercury				1 - 1						1
			Zinc										
			Benzo(a)pyrene Equivalents	2E-05		7E-06		2E-05			1		
			Arocior-1260	1E-05		6E-06	1 - 1	2E-05				1	
	-	***	Chemical Total	4E-04		5E-05		4E-04			 		
		Exposure Point Total			<u> </u>			4E-04	ļ		<u> </u>	<u> </u>	<u></u>
	Exposure	Medium Total						4E-04					<u> </u>
	Air	UXO 32	2,3,7,8-TCDD Equivalents		1E-10	·		1E-10				 ,	
			Arsenic		2E-08			2E-08					
			Cadmium		9E-10			9E-10					
		Lead						į į				,	
			Mercury .			'							
			Zinc									-	
			Benzo(a)pyrene Equivalents		4E-11			4E-11					
			Aroclor-1260		9E-11			9E-11					
			Chemical Total		2E-08			2E-08	l t	——			
		Exposure Point Total					'	2E-08					
	Exposure Medium Total							2E-08					
edium Total	~~~							4E-04					
ubsurface Soil	Subsurface Soil	UXO 32	Aluminum										L
			Arsenic	3E-04	**	2E-05		3E-04					
			Cobalt								İ		
			Iron										
			Manganese										
			Vanadium										
		1	Benzo(a)pyrene Equivalents	2E-05		9E-06		3E-05		1			
			Chemical Total	3E-04		3E-05	<u> </u>	3E-04	 	 -			
		Exposure Point Total					' -	3E-04					<u> </u>
	Exposure	Exposure Medium Total						3E-04					

TABLE 9.16.RME SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS REASONABLE MAXIMUM EXPOSURES UXO 32, INDIAN HEAD, MARYLAND PAGE 3 OF 3

Medium	Exposure Medium		Chemical of Potential	Carcinogenic Risk					Non-Carcin	ogenic Hazard	Quotient		
			Concern	Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Tota
	Air	UXO 32	Aluminum				- 1						
			Arsenic		1E-08			1E-08	ŀ				
•			Cobalt		5E-09			5E-09					
			Iron					· -					
			Manganese		4.4								
			Vanadium			*-							
			Benzo(a)pyrene Equivalents		3E-11	**	[3E-11					
			Chemical Total		2E-08			2E-08					
		Exposure Point Total						2E-08		L	·		
	Exposure Medium Total						2E-08	17.					
dium Total								3E-04			·		

^{1 -} Mutagenic chemicals were evaluated in accordance with USEPA's Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005).

ATTACHMENT 3

ProUCL PRINTOUTS

ProUCL Output Surface Soil (Current)

	<u> </u>	3	
Ge	neral UCL Statistics	s for Eull D	ata Sala
User Selected Options	neral oct Statistics	ט ונו די וטו	dia sets
	Indianhood)LIVO 22	noil DAVes	and loudes sell sures to the
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Approximate Chi S		45.99	Nonparametric Statistics
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Anderson-Da	rling Test Statistic	0.845	95% Bootstrap-t UCL 117.6
many many and a second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the	5% Critical Value	0.789	95% Hall's Bootstrap UCL 113.1
	rnov Test Statistic	0.789	
Kolmogorov-Smirnov		and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th	95% Percentile Bootstrap UCL 111.1
Data follow Appr. Gamma Distributio		0.139	95% BCA Bootstrap UCL 113.7
Pata Ionow Appl. Callina Distributio	n at 5% Significand	e Level	95% Chebyshev(Mean, Sd) UCL 152
And a second relation of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract			97.5% Chebyshev(Mean, Sd) UCL 182.1
Assuming Gamma D	ISTIDUTION	ì	99% Chebyshev(Mean, Sd) UCL 241.1

95% Approximate	Gamma	UCL	113.6
95% Adjusted	Gamma	UCL	114.9

Potential UCL to Use

Use 95% Approximate Gamma UCL 113.6

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

LEAD

	General Stat	
Number of Valid Observations	16	Number of Distinct Observations 16
Mariber of Missing Values	20	
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Raw Statistics		Log-transformed Statistics						
Minimum	8.77	Minimum of Log Data	2.171					
Maximum	263	Maximum of Log Data	5.572					
Mean	65.07	Mean of log Data	3.523					
Median	22.3	SD of log Data	1.18					
SD	77.22	Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of the Commence of th	en 1701 de 1911 de la company					
Std. Error of Mean	19.31	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s						
Coefficient of Variation	1.187	eren en en en en en en en en en en en en e						
Skewness	1.554							

Relevant UCL Statistics

Normal Distribution Test	Constitute or the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the second section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the sec	Lognormal Distribution Test	CCCC Middiscondenses en recent
Shapiro Wilk Test Statistic	0.761	Shapiro Wilk Test Statistic	0.887
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level	COLUMN TO THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STAT	Data appear Lognormal at 5% Significance Leve	
Assuming Normal Distribution	The factoring and the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second o	Assuming Lognormal Distribution	Section when the control of
95% Student's-t UCL	98.92	95% H-UCL	169.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	155.4
95% Adjusted-CLT UCL (Chen-1995)	104.8	97.5% Chebyshev (MVUE) UCL	195.1
95% Modified-t UCL (Johnson-1978)	100.2	99% Chebyshev (MVUE) UCL	273.1
Gamma Distribution Test	· · · · · · · · · · · · · · · · · · ·	Data Distribution	
k star (bias corrected)	0.77	Data appear Lognormal at 5% Significance Level	
Theta Star	84.55	The same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa	
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nu star	24.63	Annual of the control of the control of the second of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control	· · · · · · · · · · · · · · · · · · ·
Approximate Chi Square Value (.05)	14.33	Nonparametric Statistics	* A.F. * * ********* **** **** *** *** ***
Adjusted Level of Significance	0.0335	95% CLT UCL	96.83
Adjusted Chi Square Value	13.44	95% Jackknife UCL	98.92
- minutes are not a particular of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the statement of the st		95% Standard Bootstrap UCL	95.03
Anderson-Darling Test Statistic	0.916	95% Bootstrap-t UCL	112.8
Anderson-Darling 5% Critical Value	0.768	95% Hall's Bootstrap UCL	107.3
Kolmogorov-Smirnov Test Statistic	0.24	95% Percentile Bootstrap UCL	96.74
Kolmogorov-Smirnov 5% Critical Value	0.222	95% BCA Bootstrap UCL	103.2

Data not G	amma Distributed at 5% Significance Le	evel	95% Chebyshev(Mea	ın, Sd) UCL	149.2
		The same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the sa	97.5% Chebyshev(Mea	ın, Sd) UCL	185.6
	Assuming Gamma Distribution		99% Chebyshev(Mea	ın, Sd) UCL	257.2
	95% Approximate Gamma UCL	111.9			
	95% Adjusted Gamma UCL	119.3			
	Potential UCL to Use		Use 95% Chebyshev (Mea	ın, Sd) UCL	149.2

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General UCL Statistics	for Data Sets	with Non-Detects	in a server of the designation of the
User Selected Options		•	
From File H:\Indianhead\UXO 32 s	soil RA\proucl	surface soil current.wst	
Full Precision OFF			
Confidence Coefficient 95%			
lumber of Bootstrap Operations 2000			
ADMIUM			
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Number of Valid Data	15	Number of Detected Data	
Number of Distinct Detected Data	5	Number of Non-Detect Data	-
Number of Missing Values	29	Percent Non-Detects	66.67
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Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0213	Minimum Detected	-3.84
Maximum Detected	5.83	Maximum Detected	1.76
Mean of Detected	2.303	Mean of Detected	-0.80
SD of Detected	2.981	SD of Detected	2.47
Minimum Non-Detect	0.0313	Minimum Non-Detect	-3.46
Maximum Non-Detect	0.552	Maximum Non-Detect	-0.59
		And the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	
ote: Data have multiple DLs - Use of KM Method is recomn	nended	Number treated as Non-Detect	1
or all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	SHOW IN
bservations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	86.67
Warning: Thorog	ro only E Dot	ected Values in this data	A.C. 1011 - WHILLIAM - ALL 119
77 70 70 70 70 70 70 70 70 70 70 70 70 7		tstrap may be performed on this data set	
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the resulting Calculations II	lay not be rei	lable enough to draw conclusions	
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Telo recommended to mave 10-10 of mo	re distilict obs	servations for accurate and meaningful results.	
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Normal Distribution Test with Detected Values Onl		Lognormal Distribution Test with Detected Values Or	
Shapiro Wilk Test Statistic	0.736	Shapiro Wilk Test Statistic	0.89
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.76
Data not Normal at 5% Significance Level	0.702	Data appear Lognormal at 5% Significance Level	0.76
Data not rolling at 5% diginicalice Level		Data appear Lognormal at 5 % Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
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Mean	0.924	in the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second se	-1.35
SD	1.887	Mean	
95% DL/2 (t) UCL	1.782	SD:	1.55
93% DLIZ (I) OCL	1./02	95% H-Stat (DL/2) UCL	4.02
Maximum Likelihood Estimate(MLE) Method	NI/A	L D00 M	
MLE method failed to converge properly	N/A	Log ROS Method	
will mediod falled to converge properly		Mean in Log Scale	-2.18
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		Manada O data 10 data	_

Mean in Original Scale

SD in Original Scale

95% t UCL

0.808

1.933

1.687

95% Percentile Bootstrap UCL	1.604	
95% BCA Bootstrap UCL	1.922	
95% H-UCL	3	

Gamma Distribution Test with Detected Values O	nly	Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.294	Data appear Gamma Distributed at 5% Significance Le	evel
Theta Star	7.832		
nu star	2.941		
A-D Test Statistic	0.483	Nonparametric Statistics	· · · · · · · · · · · · · · · · · · ·
5% A-D Critical Value	0.725	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.725	Mean	0.832
5% K-S Critical Value	0.376	SD	1.86
Oata appear Gamma Distributed at 5% Significance	Level	SE of Mean	0.538
		95% KM (t) UCL	1.78
Assuming Gamma Distribution	* *	95% KM (z) UCL	1.717
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.697
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	8.05
Maximum	5.83	95% KM (BCA) UCL	2.225
Mean	0.768	95% KM (Percentile Bootstrap) UCL	1.989
Median	1.0000E-6	95% KM (Chebyshev) UCL	3.179
SD	1.95	97.5% KM (Chebyshev) UCL	4.194
k star	0.116	99% KM (Chebyshev) UCL	6.189
Theta star	6.621	ar ann an an an ann an an an an an an an a	, we have when an annual and
Nu star	3.478	Potential UCLs to Use	en am amerika selet da 1994
AppChi2	0.527	95% KM (t) UCL	1.78
95% Gamma Approximate UCL	5.065	The first of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the	- 700.7114
95% Adjusted Gamma UCL	6.511	A STATE OF THE PROPERTY OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF THE CONTRACT OF T	
DL/2 is not a recommended method.	***************************************	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	
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These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

BAP EQUIVALENT-HALFND

		General Statistics	
9	Number of Detected Data	17	Number of Valid Data
8	Number of Non-Detect Data	9	Number of Distinct Detected Data
47.06%	Percent Non-Detects	27	Number of Missing Values
	Log-transformed Statistics	er i visa de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'archiver de l'a	Raw Statistics
3.299	Minimum Detected	27.09	Minimum Detected
7.09	Maximum Detected	1200	Maximum Detected
4.979	Mean of Detected	273.1	Mean of Detected
1.219	SD of Detected	363.8	SD of Detected
5.886	Minimum Non-Detect	360	Minimum Non-Detect
5.991	Maximum Non-Detect	400	Maximum Non-Detect
16	Number treated as Non-Detect	ended	ve multiple DLs - Use of KM Method is recommo
1	Number treated as Detected	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	ds (except KM, DL/2, and ROS Methods),

servations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	94.12
Warning: The	re are only 9 Do	etected Values in this data	
		ootstrap may be performed on this data set	
		eliable enough to draw conclusions	er mores
the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	
It is recommended to have 10-15 or	more distinct o	bservations for accurate and meaningful results.	
and the second second second second second second second second second second second second second second second	UCL Stat	tistics	
Normal Distribution Test with Detected Values (Only	Lognormal Distribution Test with Detected Values O	nlv
Shapiro Wilk Test Statisti	•	Shapiro Wilk Test Statistic	0.9:
5% Shapiro Wilk Critical Value		5% Shapiro Wilk Critical Value	0.8
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	0.0
manufacture de designation de la company de la company de la company de la company de la company de la company		2010 appeal 20gillionia at 0 % digillionice Level	
Assuming Normal Distribution	Professional Professional Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of	Assuming Lognormal Distribution	the Salarana and Artificial States
DL/2 Substitution Method	j	DL/2 Substitution Method	
Mear	234.6	Mean	5.10
SC	260.7	SD	0.8
95% DL/2 (t) UCL	_ 345	95% H-Stat (DL/2) UCL	415
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MLE method failed to converge properly		Mean in Log Scale	4.8
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k star (bias corrected)	0.69	Data appear Gamma Distributed at 5% Significance Le	vel
Theta Star	395.8	to the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contrac	
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A-D Test Statistic	0.429	Nonparametric Statistics	****
5% A-D Critical Value	0.746	Kaplan-Meier (KM) Method	·
K-S Test Statistic	0.746	Mean	215.
5% K-S Critical Value	0.288	SD:	266.
Data appear Gamma Distributed at 5% Significance	Level	SE of Mean	72.9
	An Arrangon,	95% KM (t) UCL	34
Assuming Gamma Distribution	A CONTRACT OF STREET	95% KM (z) UCL	335.
Gamma ROS Statistics using Extrapolated Data	7	95% KM (jackknife) UCL	341.
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	450.
Maximum	1200	95% KM (BCA) UCL	345.
Mean	234.9	95% KM (Percentile Bootstrap) UCL	340
Median	179.4	95% KM (Chebyshev) UCL	533.0
W.Galari			
SD	281.2	97.5% KM (Chebyshev) UCL	671.2
Programme and the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the con	281.2 0.393	The same than the same as the same as the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the same and the sa	671. 941.

13.35

Potential UCLs to Use

Nu star

AppChi2	6.129	95% KM (BCA) UCL	345.5
95% Gamma Approximate UCL	511.6		*****
95% Adjusted Gamma UCL	557.7		
cta: DL/2 is not a recommended method.			
and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	:		and the second of
Note: Suggestions regarding the selection of a 95% UC	CL are provide	ed to help the user to select the most appropriate 95%	UCL.
These recommendations are based upon the results of	of the simulati	ion studies summarized in Singh, Maichle, and Lee (2	006).
For additional insight, t	he user may v	want to consult a statistician.	
The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th		
	PARTIES N		
ROCLOR-1260			
	General Stati	0.14	
Number of Valid Data	26	Number of Detected Data	2
Number of Distinct Detected Data	21	Number of Non-Detect Data	£
Number of Missing Values	18	Percent Non-Detects	19.23%
			ter and arrived to an arrived to the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second
Raw Statistics		Log-transformed Statistics	er ar multiple market
Minimum Detected	11	Minimum Detected	2.39
Maximum Detected	608	Maximum Detected	6.4
Mean of Detected	145	Mean of Detected SD of Detected	4.38
SD of Detected	153.5	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	1.180
Minimum Non-Detect	39.7	Minimum Non-Detect Maximum Non-Detect	3.68 3.79
Maximum Non-Detect	44.3		3.79
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or all methods (except KM, DL/2, and ROS Methods),	ended	Number treated as Non-Detect Number treated as Detected	13
Data have multiple DLs - Use of KM Method is recomm or all methods (except KM, DL/2, and ROS Methods), bservations < Largest ND are treated as NDs	ended	Number treated as Non-Detect	13
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Normal Distribution Test with Detected Values Only Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data not Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean	UCL Statist y 0.816 0.908	Number treated as Non-Detect Number treated as Detected Single DL Non-Detect Percentage ics Lognormal Distribution Test with Detected Values O Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean	13 50.00% nly 0.956 0.908
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Normal Distribution Test with Detected Values Only Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data not Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean SD 95% DL/2 (t) UCL Maximum Likelihood Estimate(MLE) Method	UCL Statist 9 0.816 0.908 121.1 146.1 170	Number treated as Non-Detect Number treated as Detected Single DL Non-Detect Percentage ics Lognormal Distribution Test with Detected Values O Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean SD 95% H-Stat (DL/2) UCL Log ROS Method	1: 50.009 nly 0.956 0.903 4.126 1.199 243
Normal Distribution Test with Detected Values Only Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data not Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean SD 95% DL/2 (t) UCL Maximum Likelihood Estimate(MLE) Method Mean	UCL Statist y 0.816 0.908 121.1 146.1 170	Number treated as Non-Detect Number treated as Detected Single DL Non-Detect Percentage ics Lognormal Distribution Test with Detected Values O Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean SD 95% H-Stat (DL/2) UCL Log ROS Method Mean in Log Scale	1: 50.009 nly 0.956 0.908 4.126 1.199 249 4.174
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Normal Distribution Test with Detected Values Only Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data not Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean SD 95% DL/2 (t) UCL Maximum Likelihood Estimate(MLE) Method Mean SD	UCL Statist y 0.816 0.908 121.1 146.1 170 38.18 231.2 115.6	Number treated as Non-Detect Number treated as Detected Single DL Non-Detect Percentage ics Lognormal Distribution Test with Detected Values O Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean SD 95% H-Stat (DL/2) UCL Log ROS Method Mean in Log Scale SD in Log Scale SD in Log Scale Mean in Original Scale	1: 50.009 nly 0.95; 0.90; 4.12; 1.19; 24; 4.17; 1.15; 122; 145.
Normal Distribution Test with Detected Values Only Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data not Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean SD 95% DL/2 (t) UCL Maximum Likelihood Estimate(MLE) Method Mean SD	UCL Statist y 0.816 0.908 121.1 146.1 170 38.18 231.2 115.6	Number treated as Non-Detect Number treated as Detected Single DL Non-Detect Percentage ics Lognormal Distribution Test with Detected Values O Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean SD 95% H-Stat (DL/2) UCL Log ROS Method Mean in Log Scale SD in Log Scale Mean in Original Scale SD in Original Scale	10 50.00% nly 0.956 0.908 4.126 1.198
Normal Distribution Test with Detected Values Only Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data not Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean SD 95% DL/2 (t) UCL Maximum Likelihood Estimate(MLE) Method Mean SD	UCL Statist y 0.816 0.908 121.1 146.1 170 38.18 231.2 115.6	Number treated as Non-Detect Number treated as Detected Single DL Non-Detect Percentage ics Lognormal Distribution Test with Detected Values O Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean SD 95% H-Stat (DL/2) UCL Log ROS Method Mean in Log Scale SD in Log Scale SD in Original Scale SD in Original Scale	1: 50.00% nly 0.956 0.908 4.126 1.199 249 4.174 1.152 122.2 145.4
Normal Distribution Test with Detected Values Only Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data not Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean SD 95% DL/2 (t) UCL Maximum Likelihood Estimate(MLE) Method Mean SD	UCL Statist y 0.816 0.908 121.1 146.1 170 38.18 231.2 115.6	Number treated as Non-Detect Number treated as Detected Single DL Non-Detect Percentage ics Lognormal Distribution Test with Detected Values O Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean SD 95% H-Stat (DL/2) UCL Log ROS Method Mean in Log Scale SD in Log Scale Mean in Original Scale SD in Original Scale 95% t UCL 95% Percentile Bootstrap UCL	1: 50.009 nly 0.95 0.903 4.12 1.19 24: 4.17 1.15; 122.; 170.

evel	Data appear Gamma Distributed at 5% Significance Le	0.875	k star (bias corrected)
		165.8	Theta Star
v		36.74	nu star
	en en en en en en en en en en en en en e		
	Nonparametric Statistics	0.448	A-D Test Statistic
	Kaplan-Meier (KM) Method	0.77	5% A-D Critical Value
12:	Mean	0.77	K-S Test Statistic
142.	SD	0.195	5% K-S Critical Value
28.7	SE of Mean	evel	appear Gamma Distributed at 5% Significance Lo
17	95% KM (t) UCL	Č	
169.2	95% KM (z) UCL	·	Assuming Gamma Distribution
170.8	95% KM (jackknife) UCL		Gamma ROS Statistics using Extrapolated Data
188.9	95% KM (bootstrap t) UCL	0.201	Minimum
175.	95% KM (BCA) UCL	608	Maximum
170.8	95% KM (Percentile Bootstrap) UCL	117.2	Mean
247.1	95% KM (Chebyshev) UCL	47.05	Median
301.3	97.5% KM (Chebyshev) UCL	149.1	SD
407.6	99% KM (Chebyshev) UCL	0.403	k star
· are selected ordered to a	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	290.8	Theta star
	Potential UCLs to Use	20.95	. Nu star
247.1	95% KM (Chebyshev) UCL	11.55	AppChi2
THE THEOLOGY THE STREET		212.5	95% Gamma Approximate UCL
	And the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	221.3	95% Adjusted Gamma UCL
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Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

ProUCL Output Surface Soil (Under Cap)

General UCL Statistics	for Full Data Set	
User Selected Options	HOI Fun Data CC.	S
From File H:\Indianhead\UXO 32 s	coil P∆\nroucl\sùr	face soil under can wst
Full Precision OFF	50II naipiousius	lace suit unider cap.wac
Confidence Coefficient 95%		
umber of Bootstrap Operations 2000		(x,y) = (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y) + (x,y
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RSENIC		
	General Statist	fics
Number of Valid Observations	6	Number of Distinct Observations 5
Raw Statistics		Log-transformed Statistics
Minimum:	5.2	Minimum of Log Data 1.64
Maximum	110	Maximum of Log Data 4.7
Mean	36.2	Mean of log Data 3.06
Median	29.75	SD of log Data 1.19
SD,	38.83	
Std. Error of Mean	15.85	
Coefficient of Variation	1.073	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon
Skewness	1.746	
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		QO) based sample size and analytical results.
Warning: TI	here are only 6 Va	alues in this data
		ethods may be performed on this data set,
		ole enough to draw conclusions
The literature suggests to use bootstrap	and the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second o	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s
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		tistics Lognormal Distribution Test
Shapiro Wilk Test Statistic	0.797	tistics Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value		tistics Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78
Shapiro Wilk Test Statistic	0.797	tistics Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value	0.797	tistics Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level	0.797	tistics Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78 Data appear Lognormal at 5% Significance Level
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution	0.797	tistics Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution 95% Student's-t UCL	0.797	tistics Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution 95% H-UCL 567.8
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution 95% Student's-t UCL 95% UCLs (Adjusted for Skewness)	0.797 0.788	Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution 95% H-UCL 567.8 95% Chebyshev (MVUE) UCL 113.9
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution 95% Student's-t UCL 95% UCLs (Adjusted for Skewness) 95% Adjusted-CLT UCL (Chen-1995)	0.797 0.788 68.14	Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution 95% H-UCL 567.8 95% Chebyshev (MVUE) UCL 113.9
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution 95% Student's-t UCL 95% UCLs (Adjusted for Skewness) 95% Adjusted-CLT UCL (Chen-1995)	0.797 0.788 68.14	Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution 95% H-UCL 567.8 95% Chebyshev (MVUE) UCL 113.9
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution 95% Student's-t UCL 95% UCLs (Adjusted for Skewness) 95% Adjusted-CLT UCL (Chen-1995) 95% Modified-t UCL (Johnson-1978)	0.797 0.788 68.14	Lognormal Distribution Test Shapiro Wilk Test Statistic 0.90 Shapiro Wilk Critical Value 0.78 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution 95% H-UCL 567.8 95% Chebyshev (MVUE) UCL 113.9 97.5% Chebyshev (MVUE) UCL 147 99% Chebyshev (MVUE) UCL 212.2
Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution 95% Student's-t UCL 95% UCLs (Adjusted for Skewness) 95% Adjusted-CLT UCL (Chen-1995) 95% Modified-t UCL (Johnson-1978) . Gamma Distribution Test	0.797 0.788 68.14 74.35 70.03	Lognormal Distribution Test Shapiro Wilk Test Statistic 0.906 Shapiro Wilk Critical Value 0.788 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution 95% H-UCL 567.8 95% Chebyshev (MVUE) UCL 113.9 97.5% Chebyshev (MVUE) UCL 147 99% Chebyshev (MVUE) UCL 212.2 Data Distribution

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36.2

MLE of Standard Deviation	44.69	and the second security of the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second	man in the second
nu star	7.875		
Approximate Chi Square Value (.05)	2.663	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	62.27
Adjusted Chi Square Value	1.699	95% Jackknife UCL	68.14
		95% Standard Bootstrap UCL	60.33
Anderson-Darling Test Statistic	0.35	95% Bootstrap-t UCL	101.9
Anderson-Darling 5% Critical Value	0.714	95% Hall's Bootstrap UCL	169.1
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	61.33
Kolmogorov-Smirnov 5% Critical Value	0.34	95% BCA Bootstrap UCL	68.67
Data appear Gamma Distributed at 5% Significance Lo	evel	95% Chebyshev(Mean, Sd) UCL	105.3
		97.5% Chebyshev(Mean, Sd) UCL	135.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	193.9
95% Approximate Gamma UCL	107.1	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	
95% Adjusted Gamma UCL	167.8		
Potential UCL to Use	Alle American Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company of the Company	Use 95% Student's-t UCL	68.14

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

LEAD

	General Statis	tics	· ·
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics	the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence of the commence o	Log-transformed Statistics	the Marin Hall of the Applications
Minimum	5.3	Minimum of Log Data	1.668
Maximum	9800	Maximum of Log Data	9.19
Mean	1672	Mean of log Data	4.077
Median	39.75	SD of log Data	2.824
SD	3982	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PERSON NAMED IN THE PE
Std. Error of Mean	1626	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	· · · · · · · · · · · · · · · · · · ·
Coefficient of Variation	2.382	2	on too Make the target survey we
Skewness	2.449	The second second control of the second control of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the sec	

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!

If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data

Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test	Lawrence of the law times (monoton)	Lognormal Distribution Test	Andres Transmis wi
Shapiro Wilk Test Statistic	0.507	Shapiro Wilk Test Statistic	0.86
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Leve	el
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4948	95% H-UCL	2.480E+9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3343
95% Adjusted-CLT UCL (Chen-1995)	6082	97.5% Chebyshev (MVUE) UCL	4486
95% Modified-t UCL (Johnson-1978)	5219	99% Chebyshev (MVUE) UCL	6732
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.22	Data appear Lognormal at 5% Significance Leve	el
Theta Star	7609		
MLE of Mean	1672		
MLE of Standard Deviation	3566	m in the sign of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of	
nu star	2.637		
Approximate Chi Square Value (.05)	0.273	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	4346
Adjusted Chi Square Value	0.125	95% Jackknife UCL	4948
The second second second second second second second second second second second second second second second se	v	95% Standard Bootstrap UCL	4112
Anderson-Darling Test Statistic	0.892	95% Bootstrap-t UCL	237883
Anderson-Darling 5% Critical Value	0.796	95% Hall's Bootstrap UCL	145748
Kolmogorov-Smirnov Test Statistic	0.376	95% Percentile Bootstrap UCL	4912
Kolmogorov-Smirnov 5% Critical Value	0.363	95% BCA Bootstrap UCL	4949
Data not Gamma Distributed at 5% Significance Le	evel	95% Chebyshev(Mean, Sd) UCL	8758
	Annual Communication	97.5% Chebyshev(Mean, Sd) UCL	11825
Assuming Gamma Distribution	1977 TETER - 1977 2077 1 Charleston produces	99% Chebyshev(Mean, Sd) UCL	17848
95% Approximate Gamma UCL	16120		hadrande de de de en en en en en en en en en en en en en
95% Adjusted Gamma UCL	35254		Calderia and a Prince of a
Potential UCL to Use	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Use 99% Chebyshev (Mean, Sd) UCL	17848
Recommended	JCL exceeds th	e maximum observation	A A BANK TITOS TON TON BOOK AND THE ATT A TO A

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

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Full Precision OFF			
Confidence Coefficient 95%			
umber of Bootstrap Operations 2000			
ROCLOR-1260		en en en en en en en en en en en en en e	
	General St	atietice	
Number of Valid Data		Number of Detected Data	
Number of Distinct Detected Data		Number of Non-Detect Data	
	i van de de de despera	Percent Non-Detects	20.00
	L	T CIGETT NOTIFICATION	20.00
Raw Statistics		Log-transformed Statistics	
Minimum Detected	5.8	Minimum Detected	1.7
Maximum Detected	11000	Maximum Detected	9.30
Mean of Detected	3991	Mean of Detected	5.40
SD of Detected	5221	SD of Detected	3.9
Minimum Non-Detect	38	Minimum Non-Detect	3.63
Maximum Non-Detect	38	Maximum Non-Detect	3.63
Note: It should be noted that even	en though boo	t Detected Values in this data otstrap may be performed on this data set liable enough to draw conclusions	
Note: It should be noted that even the resulting calculations	en though boo may not be re	otstrap may be performed on this data set	
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Note: It should be noted that eventhe resulting calculations It is recommended to have 10-15 or more Normal Distribution Test with Detected Values Or Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Normal at 5% Significance Level Assuming Normal Distribution DL/2 Substitution Method Mean SD 95% DL/2 (t) UCL Maximum Likelihood Estimate(MLE) Method	en though boomay not be reported distinct observed uCL Statistics of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control	Itistrap may be performed on this data set Iliable enough to draw conclusions servations for accurate and meaningful results. Stics Lognormal Distribution Test with Detected Values On Shapiro Wilk Test Statistic 5% Shapiro Wilk Critical Value Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution DL/2 Substitution Method Mean SD 95% H-Stat (DL/2) UCL 2.2 Log ROS Method Mean in Log Scale SD in Log Scale Mean in Original Scale	0.81 0.74 4.96 3.63 272E+1 4.86 3.70 319

95% BCA Bootstrap UCL 7592

95% H-UCL 9.321E+18

,		Gamma Distribution Test with Detected Values Only	
	Data appear Normal at 5% Significance Level	0.23	k star (bias corrected)
		17392	Theta Star
		1.836	nu star
	Nonparametric Statistics	0.507	A-D Test Statistic
	Kaplan-Meier (KM) Method	0.718	5% A-D Critical Value
3195	Mean	0.718	K-S Test Statistic
4347	SD	0.421	5% K-S Critical Value
2245	SE of Mean	evel	ta appear Gamma Distributed at 5% Significance L
7980	95% KM (t) UCL		
6887	95% KM (z) UCL		Assuming Gamma Distribution
7828	95% KM (jackknife) UCL		Gamma ROS Statistics using Extrapolated Data
8188	95% KM (bootstrap t) UCL	.0000E-6	Minimum
6604	95% KM (BCA) UCL	11000	Maximum
7370	95% KM (Percentile Bootstrap) UCL	3193	Mean
12979	95% KM (Chebyshev) UCL	10	Median
17213	97.5% KM (Chebyshev) UCL	4861	SD
25529	99% KM (Chebyshev) UCL	0.182	k star
		17514	Theta star
	Potential UCLs to Use	1.823	Nu star
7980	95% KM (t) UCL	0.131	AppChi2
7370	95% KM (Percentile Bootstrap) UCL	44364	95% Gamma Approximate UCL
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DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

ProUCL Output Surface Soil (Future)

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Number of Valid Observations	General St		
Number of Valid Observations	50	Number of Distinct Observations	49
Raw Statistics	Comment of the second	Locked formed Control	
Minimum	3.24	Log-transformed Statistics	4 470
Maximum	423	Minimum of Log Data	1.176
Mean	77	Maximum of Log Data Mean of log Data	6.047 3.555
Median	34.95	SD of log Data	1.331
SD	101	Jobi log Data	1.551
Std. Error of Mean	14.28	And the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	
Coefficient of Variation	1.311		
Skewness	1.994		
e estado de la composição de la composição de la composição de la composição de la composição de la composição			
F	Relevant UCL	Statistics	
Normal Distribution Test		Lognormal Distribution Test	Tat Took It our entroop
Shapiro Wilk Test Statistic	0.712	Shapiro Wilk Test Statistic	0.961
Shapiro Wilk Critical Value	0.947	Shapiro Wilk Critical Value	0.947
Data not Normal at 5% Significance Level	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	Data appear Lognormal at 5% Significance Level	
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Assuming Normal Distribution	The Charles and the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of	Assuming Lognormal Distribution	
95% Student's-t UCL	100.9		42.5
95% UCLs (Adjusted for Skewness)		A COMPANIE OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF	68.3
95% Adjusted-CLT UCL (Chen-1995)	104.8	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	05.5
95% Modified-t UCL (Johnson-1978)	101.6	99% Chebyshev (MVUE) UCL 2	78.7
Gamma Distribution Test		Don't District the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of t	
k star (bias corrected)	0.726	Data Distribution	
Theta Star	106.1	Data appear Lognormal at 5% Significance Level	
MLE of Mean	77		
MLE of Standard Deviation	90.38		time to a to the comment
nu star	72.59		
Approximate Chi Square Value (.05)	53.97	Nonparametric Statistics	
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Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL 21	9.1

95% Approximate Gamma UCL 103.6 95% Adjusted Gamma UCL 104.5

Potential UCL to Use

Adjusted Level of Significance

Adjusted Chi Square Value

Use 95% H-UCL 142.5

95% CLT UCL 1232

95% Jackknife UCL 1265

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.

H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.

It is therefore recommended to avoid the use of H-statistic based 95% UCLs.

Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

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and Singh and Singh (2003). For a	dditional in	sight, the user may want to consult a statistician.	
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Raw Statistics		Log-transformed Statistics	
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F	Relevant U(CL Statistics	
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Shapiro Wilk Test Statistic	0.245	Shapiro Wilk Test Statistic	0.859
Shapiro Wilk Critical Value	0.911	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level	• • • • • • • • • • • • • • • • • • • •	Data not Lognormal at 5% Significance Level	0.311
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95% Student's-t UCL	1265	95% H-UCL	694.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	446.6
95% Adjusted-CLT UCL (Chen-1995)	1704	97.5% Chebyshev (MVUE) UCL	575
95% Modified-t UCL (Johnson-1978)		97.5% Chebyshev (MVUE) UCL	827.2
		33 /0 CHEDYSHOV (INVOL) GOL	821.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.267	Data Distribution Data do not follow a Discernable Distribution (0.05)	- X
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MLE of Standard Deviation	973.1		
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Anderson-Darling Test Statistic	3.815	95% E	Bootstrap-t UCL	18586
Anderson-Darling 5% Critical Value	0.859	95% Hall's	Bootstrap UCL	9612
Kolmogorov-Smirnov Test Statistic	0.324	95% Percentile	Bootstrap UCL	1387
Kolmogorov-Smirnov 5% Critical Value	0.202	95% BCA	Bootstrap UCL	1842
Data not Gamma Distributed at 5% Significance Lev	vel	95% Chebyshev(Mean, Sd) UCL	2434
		97.5% Chebyshev(Mean, Sd) UCL	3270
Assuming Gamma Distribution	and the same of the	99% Chebyshev(Mean, Sd) UCL	4911
95% Approximate Gamma UCL	1167 .			
95% Adjusted Gamma UCL	1247	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon		errone erron og er en en en en en en en en en en en en en
				. 0.41
Potential UCL to Use		Use 95% Chebyshev (I	Mean, Sd) UCL	2434

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General UCL Statistics	for Data Set	s with Non-Detects	
User Selected Options	· ·	S With Non-Detects	
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	General St	atistics	
Number of Valid Data	16	Number of Detected Data	
Number of Distinct Detected Data	6	Number of Non-Detect Data	
Number of Missing Values	34	Percent Non-Detects	62.50
The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon		en er en en en en en en en en en en en en en	
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0213	Minimum Detected	-3.84
Maximum Detected	69	Maximum Detected	4.23
Mean of Detected	13.42	Mean of Detected	0.037
SD of Detected	27.36	SD of Detected	3.01
Minimum Non-Detect	0.0313	Minimum Non-Detect	-3.46
Maximum Non-Detect	0.552	Maximum Non-Detect	-0.59
The first term of the first term of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the seco			
ote: Data have multiple DLs - Use of KM Method is recomn	nended	Number treated as Non-Detect	1
or all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	
bservations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	01.050
		olligic DE Noir-Detect refeeltage	81.25%
Warning: There a	re only 6 De	tected Values in this data	ere and branches
The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon		otstrap may be performed on this data set	
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It is recommended to have 10-15 or mo	o dictinat ob	servations for accurate and meaningful results.	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s
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Normal Distribution Test with Detected Values Onl		Lognormal Distribution Test with Detected Values Or	
Shapiro Wilk Test Statistic	0.575	Shapiro Wilk Test Statistic	
5% Shapiro Wilk Critical Value	0.788	A STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STATE OF THE STA	0.955
Data not Normal at 5% Significance Level	······································	5% Shapiro Wilk Critical Value	0.788
		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		The many that the same and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the	
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DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.178	Mean	-1.008
SD	17.12	SD	2.052
95% DL/2 (t) UCL	12.68	95% H-Stat (DL/2) UCL	33.65
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.821
		NAME OF PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE P	
		SD in Log Scale	2.337
		NAME OF PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE PARTICIPATION OF THE P	-1.821 2.337 5.069 17.15

12.59

95% t UCL

	4.00
95% Percentile Bootstrap UCL	13.36
95% BCA Bootstrap UCL	18.31
95% H-UCL	54.5

1.219

5.886

5.991

SD of Detected

Minimum Non-Detect

Maximum Non-Detect

4	· I	
	95% BCA Bootstrap UCL	18.3
	95% H-UCL	54
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0.776	Kaplan-Meier (KM) Method	
0.776	Mean	5.09
0.359	SD.	16
Level	SE of Mean	4.54
	95% KM (t) UCL	13.0
Í., , , , , , , , , , , , , , , , , , ,	95% KM (z) UCL	12.5
y		12.5
		63.
69		14.3
5.032		13.6
1.0000E-6		24.9
17.16		33.4
0.108	L.	50.3
	Potential UCLs to Use	
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17 9 32	Number of Detected Data Number of Non-Detect Data Percent Non-Detects Log-transformed Statistics	47.06%
17 9 32 27.09	Number of Detected Data Number of Non-Detect Data Percent Non-Detects Log-transformed Statistics Minimum Detected	47.06% 3.299
17 9 32	Number of Detected Data Number of Non-Detect Data Percent Non-Detects Log-transformed Statistics	3.299 7.09
	1.0000E-6 69 5.032 1.0000E-6 17.16 0.108 46.7 3.448 0.517 33.58 42.39	Donly Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance L 54:14 Donly Data appear Gamma Distributed at 5% Significance L 54:14 Donly Data appear Gamma Distributed at 5% Significance L 54:14 Donly Data appear Gamma Distributed at 5% Significance L 54:14 Donly Data Distribution Test with Detected Values Only Data Appear Gamma Distributed at 5% Significance L 54:14 Donly Data Distribution Test with Detected Values Only Data Appear Gamma Distributed at 5% Significance L 54:14 Donly Data Distribution Test with Detected Values Only Data Appear Gamma Distributed at 5% Significance L 54:14 R 2.974 Nonparametric Statistics Kaplan-Meier (KM) Method Mean

lote: Data have multiple DLs - Use of KM Method is recommended Number treated as Non-Detect 16 or all methods (except KM, DL/2, and ROS Methods), Number treated as Detected

363.8

360

400

SD of Detected

Minimum Non-Detect

Maximum Non-Detect

Warning: There are only 9 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

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Normal Distribution Test with Detected Values Or	UCL State	tistics Lognormal Distribution Test with Detected Values O	nly
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	niy 0.93
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	0.62
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Assuming Normal Distribution	the comment of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of the contract of	Assuming Lognormal Distribution	a tanama (fage
DL/2 Substitution Method		DL/2 Substitution Method	1100 110 1 V - 110 V Annual
Mean.	234.6	Mean:	5.108
· SD	260.7	SD	0.873
95% DL/2 (t) UCL	345	95% H-Stat (DL/2) UCL	415.5
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Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	40.00
MLE method failed to converge properly		Mean in Log Scale	4.84
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	Anna and a second	Mean in Original Scale	203.5
		SD in Original Scale	272.7
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k star (bias corrected) Theta Star nu star	0.69 395.8 12.42	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics	
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k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value	0.69 395.8 12.42 0.429 0.746 0.746	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean	215.6
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value	0.69 395.8 12.42 0.429 0.746 0.746 0.288	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD	215.6 266.4
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value	0.69 395.8 12.42 0.429 0.746 0.746 0.288	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean	215.6 266.4 72.95
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value	0.69 395.8 12.42 0.429 0.746 0.746 0.288	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL	215.6 266.4 72.95 343
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value a appear Gamma Distributed at 5% Significance Lo	0.69 395.8 12.42 0.429 0.746 0.746 0.288	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL	215.6 266.4 72.95 343 335.6
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value a appear Gamma Distributed at 5% Significance Lo	0.69 395.8 12.42 0.429 0.746 0.746 0.288 evel	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL	215.6 266.4 72.95 343 335.6 341.5
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value a appear Gamma Distributed at 5% Significance Le Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data	0.69 395.8 12.42 0.429 0.746 0.746 0.288 evel	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL	215.6 266.4 72.95 343 335.6 341.5 457.1
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k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value a appear Gamma Distributed at 5% Significance Lo Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum 1 Maximum	0.69 395.8 12.42 0.429 0.746 0.746 0.288 evel	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (Percentile Bootstrap) UCL	215.6 266.4 72.95 343 335.6 341.5 457.1 363.9 342.9
Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value ta appear Gamma Distributed at 5% Significance Le Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum 1 Maximum Mean	0.69 395.8 12.42 0.429 0.746 0.746 0.288 evel .0000E-6 1200 234.9 179.4	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL	215.6 266.4 72.95 343 335.6 341.5 457.1 363.9 342.9 533.6
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value ta appear Gamma Distributed at 5% Significance Le Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum 1 Maximum Mean Median	0.69 395.8 12.42 0.429 0.746 0.746 0.288 evel	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL 97.5% KM (Chebyshev) UCL	215.6 266.4 72.95 343 335.6 341.5 457.1 363.9 342.9 533.6 671.2
k star (bias corrected) Theta Star nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value la appear Gamma Distributed at 5% Significance Lo Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum 1 Maximum Mean Median SD	0.69 395.8 12.42 0.429 0.746 0.746 0.288 evel .0000E-6 1200 234.9 179.4 281.2	Data Distribution Test with Detected Values Only Data appear Gamma Distributed at 5% Significance Le Nonparametric Statistics Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL	215.6 266.4 72.95 343 335.6 341.5 457.1 363.9 342.9 533.6

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AppChi2	6.129	95% KM (BCA) UCL	363.9
95% Gamma Approximate UCL	511.6	e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya del companya de la companya de la companya del companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la co	
95% Adjusted Gamma UCL	557.7		
DL/2 is not a recommended method.			
These recommendations are based upon the results	of the simul	ided to help the user to select the most appropriate 95% ation studies summarized in Singh, Maichle, and Lee (20 y want to consult a statistician.	
a de la companya de la companya de la companya de la companya de la companya de la companya de la companya de La companya de la companya de la companya de la companya de la companya de la companya de la companya de la co		The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	
AROCLOR-1260			
	General Sta	atistics	
Number of Valid Data	31	Number of Detected Data	25
Number of Distinct Detected Data	25	Number of Non-Detect Data	6
Number of Missing Values	18	Percent Non-Detects	19.35%
Raw Statistics		Log transformed Statistics	
Minimum Detected	5.8	Log-transformed Statistics Minimum Detected	1.758
The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon		Maximum Detected	9.306
Maximum Detected	11000	Mean of Detected	4.562
Mean of Detected	760.5	*	
SD of Detected	2345	SD of Detected	1.823
Minimum Non-Detect	38	Minimum Non-Detect	3.638
Maximum Non-Detect	44.3	Maximum Non-Detect	3.791
Data have multiple DLs - Use of KM Method is recomn	nended	Number treated as Non-Detect	16
or all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	15
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	51.61%
	UCL Stati	istics	1. 1 ₂ a - 11.1 - 110.1 1.1 (11.21 - 10.00)
Normal Distribution Test with Detected Values On		Lognormal Distribution Test with Detected Values Or	
Shapiro Wilk Test Statistic	0.351	Shapiro Wilk Test Statistic	0.937
5% Shapiro Wilk Critical Value	0.918	5% Shapiro Wilk Critical Value	0.918
Data not Normal at 5% Significance Level	0.510	Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution	i 	Assuming Lognormal Distribution	many may assessment
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	617.2	Mean	4.261
SD	2118	SD,	1.746
95% DL/2 (t) UCL	1263	95% H-Stat (DL/2) UCL	972.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	4.249
		SD in Log Scale	1.755
		Mean in Original Scale	617
		SD in Original Scale	2118
	an in the second	95% t UCL	1263
		95% Percentile Bootstrap UCL	1315
		95% BCA Bootstrap UCL	1686
	:	95% H-UCL	986
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Gamma Distribution Test with Detected Values On	ly	Data Distribution Test with Detected Values Only	

wia Fall			
I	Data appear Lognormal at 5% Significance Level	0.315	k star (bias corrected)
	the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	2412	Theta Star
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	the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon		
	Nonparametric Statistics	2.774	A-D Test Statistic
	Kaplan-Meier (KM) Method	0.845	5% A-D Critical Value
617.4	Mean	0.845	K-S Test Statistic
2084	SD	0.189	5% K-S Critical Value
382	SE of Mean	evel	Data not Gamma Distributed at 5% Significance Le
1266	95% KM (t) UCL		
1246	95% KM (z) UCL		Assuming Gamma Distribution
1263	95% KM (jackknife) UCL		Gamma ROS Statistics using Extrapolated Data
9051	95% KM (bootstrap t) UCL	1.0000E-6	Minimum
1328	95% KM (BCA) UCL	11000	Maximum
1307	95% KM (Percentile Bootstrap) UCL	613.3	Mean
2282	95% KM (Chebyshev) UCL	39;	Median
3003	97.5% KM (Chebyshev) UCL	2119	SD
4418	99% KM (Chebyshev) UCL	0.151	k star
**************************************		4072	Theta star
	Potential UCLs to Use	9.338	Nu star
4418	99% KM (Chebyshev) UCL	3.533	AppChi2
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* ** ***		1717	95% Adjusted Gamma UCL

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

ProUCL Output Subsurface Soil

General UCL Statistics for	r Full Data Sets
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Warning: A sample size of 'n' = 7 may not adequate end. It is suggested to collect at least 8 to the possible compute and collect Data Quality of the Possible Compute and collect Data Quality of the Possible Compute and collect Data Quality of the Possible Compute and collect Data Quality of the Possible Compute and collect Data Quality of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of the Possible Collection of th	to 10 observations using these statistical methods! Objectives (DQO) based sample size and analytical results. e are only 7 Values in this data the bootstrap methods may be performed on this data set, y not be reliable enough to draw conclusions ethods on data sets having more than 10-15 observations. evant UCL Statistics Lognormal Distribution Test 0.766 Shapiro Wilk Test Statistic 0.803 Data appear Lognormal at 5% Significance Level Assuming Lognormal Distribution 25 95% Chebyshev (MVUE) UCL 5441 97.5% Chebyshev (MVUE) UCL 6838 99% Chebyshev (MVUE) UCL 9580
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MLE of Standard Deviation	2262	ffer and the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control	the same of a series of the
nu star	14.13		
Approximate Chi Square Value (.05)	6.66	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	3672
Adjusted Chi Square Value	5.192	95% Jackknife UCL	3925
		95% Standard Bootstrap UCL	3582
Anderson-Darling Test Statistic	0.284	95% Bootstrap-t UCL	6628
Anderson-Darling 5% Critical Value	0.72	95% Hall's Bootstrap UCL	9856
Kolmogorov-Smirnov Test Statistic	0.163	95% Percentile Bootstrap UCL	3646
Kolmogorov-Smirnov 5% Critical Value	0.317	95% BCA Bootstrap UCL	4223
Data appear Gamma Distributed at 5% Significance	Level	95% Chebyshev(Mean, Sd) UCL	5981
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Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10738
95% Approximate Gamma UCL	4820	The second section of the second section is a second section of the second section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section section sec	
95% Adjusted Gamma UCL	6182	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	
Potential UCL to Use		Use 95% Approximate Gamma UCL	4820

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General Statistics

IRON

Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics	ere e e e e e e e e e e e e e e e e e e	Log-transformed Statistics	
Minimum	1710	Minimum of Log Data	7.444
Maximum	13800	Maximum of Log Data	9.532
Mean	6366	Mean of log Data	8.49
Median	6410	SD of log Data	0.832
SD:	4596	emente la la culturación inicia Anti-communica de communicación de la completa de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la communicación de la c	
Std. Error of Mean	1737		
Coefficient of Variation	0.722	Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Committee of the Commit	
Skewness	0.577	en en en antique de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la compansión de la	

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!

If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data

Note: It should be noted that even though bootstrap methods may be performed on this data set, the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

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Normal Distribution Test	Per en como mente en composition en Societa como	Lognormal Distribution Test	San - Paire San
Shapiro Wilk Test Statistic	0.91	Shapiro Wilk Test Statistic	0.90
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.80
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Levi	el
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9742	95% H-UCL	20631
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15406
95% Adjusted-CLT UCL (Chen-1995)	9629	97.5% Chebyshev (MVUE) UCL	19270
95% Modified-t UCL (Johnson-1978)	9805	99% Chebyshev (MVUE) UCL	26860
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.242	Data appear Normal at 5% Significance Level	
Theta Star:	5124	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	
MLE of Mean	6366	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	
MLE of Standard Deviation	5712	en en en en en en en en en en en en en e	**** * ***
nu star	17.39	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	
Approximate Chi Square Value (.05)	8.955	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	9224
Adjusted Chi Square Value	7.203	95% Jackknife UCL	9742
and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s		95% Standard Bootstrap UCL	8972
Anderson-Darling Test Statistic	0.358	95% Bootstrap-t UCL	10756
Anderson-Darling 5% Critical Value	0.715	95% Hall's Bootstrap UCL	9407
Kolmogorov-Smirnov Test Statistic	0.23	95% Percentile Bootstrap UCL	9020
Kolmogorov-Smirnov 5% Critical Value	0.315	95% BCA Bootstrap UCL	9396
appear Gamma Distributed at 5% Significance	Level	95% Chebyshev(Mean, Sd) UCL	13938
	e e dendere e destamble : : :	97.5% Chebyshev(Mean, Sd) UCL	17215
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23650
95% Approximate Gamma UCL	12367	The second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of th	
95% Adjusted Gamma UCL	15375		
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Potential UCL to Use		Use 95% Student's-t UCL	9742

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and laci (2002) and Singh and Singh (2003). For additional insight, the user may want to consult a statistician.

General UCL Statistic	s for Data Se	Pls with Non-Datacts	
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Minimum Detected	0.965	Minimum Detected	-0.0356
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A-D Test Statistic	2.736	Nonparametric Statistics	
5% A-D Critical Value	0.81	Kaplan-Meier (KM) Method	* * * -
K-S Test Statistic	0.81	Mean	32.7
5% K-S Critical Value	0.164	SD.	71.2
Data not Gamma Distributed at 5% Significance Le	vel	SE of Mean	12.4
		95% KM (t) UCL	53.7
Assuming Gamma Distribution		95% KM (z) UCL	53.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	53.6
Minimum	1.0000E-6	95% KM (bootstrap t) UCL	75.3
Maximum	328	95% KM (BCA) UCL	54
Mean	32.66	95% KM (Percentile Bootstrap) UCL	53.8
Median	7.775	95% KM (Chebyshev) UCL	86
SD	72.31	97.5% KM (Chebyshev) UCL	110
k star	0.311	99% KM (Chebyshev) UCL	156
Theta star	104.9	and the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contract of the second contrac	et et al. vivos tilvados abadentifica a
Nu star	21.16	Potential UCLs to Use	e a marina de la compania de la compania de la compania de la compania de la compania de la compania de la comp
AppChi2	11.71	97.5% KM (Chebyshev) UCL	110
95% Gamma Approximate UCL	59.01	A CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR OF THE CONTRACTOR	
95% Adjusted Gamma UCL	60.81	The second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of the second control of	
DL/2 is not a recommended method.		A COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION OF THE COMMISSION	
			and the many as a single-
ote: Suggestions regarding the selection of a 95% U	CL are provided	to help the user to select the most appropriate 95%	UCL.

MANGANESE

	General Statistics				
6	Number of Detected Data	7	Number of Valid Data		
1	Number of Non-Detect Data	6	Number of Distinct Detected Data		
14.29%	Percent Non-Detects	The second section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of the section of	in the course of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the country of the		

Raw Statistics	w Statistics Log-transformed Statistics		
Minimum Detected	4.1	Minimum Detected	1.411
Maximum Detected	152	Maximum Detected	5.024
Mean of Detected	36.32	Mean of Detected	2.785
SD of Detected	57.35	SD of Detected	1.308
Minimum Non-Detect	3.15	Minimum Non-Detect	1.147
Maximum Non-Detect	3.15	Maximum Non-Detect	1.147

Warning: There are only 6 Detected Values in this data

Note: It should be noted that even though bootstrap may be performed on this data set the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values O		Lognormal Distribution Test with Detected Values Or	·
Shapiro Wilk Test Statistic		Shapiro Wilk Test Statistic	0.9
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	31.35	Mean	2.
SD	53.97	SD.	1.
95% DL/2 (t) UCL 70.99 95%		95% H-Stat (DL/2) UCL	78
Maximum Likelihood Estimate(MLE) Method	a de la companya de la companya de la companya de la companya de la companya de la companya de la companya de Esta de la companya de la companya de la companya de la companya de la companya de la companya de la companya	Log ROS Method	
Mean	26.32	Mean in Log Scale	2.
SD	55.43	SD in Log Scale	1.
95% MLE (t) UCL	67.03	Mean in Original Scale	3
95% MLE (Tiku) UCL	65.19	SD in Original Scale	54
		95% t UCL	70
en en en en en en en en en en en en en e		95% Percentile Bootstrap UCL	7(
		95% BCA Bootstrap UCL	88
		95% H UCL	2
Common Diatribution Test with Dataset Mal			
Gamma Distribution Test with Detected Values O	0.482	Data Distribution Test with Detected Values Only	
k star (bias corrected) Theta Star		Data appear Gamma Distributed at 5% Significance Le	evei
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nu star	75.28 5.789		
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nu star	5.789	Nonparametric Statistics Kaplan-Meier (KM) Method	
nu star A-D Test Statistic	5.789 0.529	A STATE OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PARTY OF THE PAR	3
nu star A-D Test Statistic 5% A-D Critical Value	5.789 0.529 0.721	Kaplan-Meier (KM) Method	
nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic	5.789 0.529 0.721 0.721 0.344	Kaplan-Meier (KM) Method Mean	49
nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value	5.789 0.529 0.721 0.721 0.344	Kaplan-Meier (KM) Method Mean SD	49
nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value	5.789 0.529 0.721 0.721 0.344	Kaplan-Meier (KM) Method Mean SD SE of Mean	49 2 7
nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Data appear Gamma Distributed at 5% Significance	5.789 0.529 0.721 0.721 0.344	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL	49 7
nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Pata appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data	5.789 0.529 0.721 0.721 0.344	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL	7:
nu star A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Pata appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data	5.789 0.529 0.721 0.721 0.344 Level	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL	49 7- 6 71 27
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Pata appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum	5.789 0.529 0.721 0.721 0.344 Level	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL	49 71 6 71 27
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Data appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum Maximum Mean Median	5.789 0.529 0.721 0.721 0.344 Level 1.0000E-6 152 31.13 10.6	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (BCA) UCL	49 71 6 71 27 72
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Data appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum Maximum Mean	5.789 0.529 0.721 0.344 Level 1.0000E-6 152 31.13 10.6 54.12	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL	49 71 6 71 27 72 70
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Data appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum Maximum Mean Median	5.789 0.529 0.721 0.721 0.344 Level 1.0000E-6 152 31.13 10.6	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL	49 2 71 6 71 27 72 70 12
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Oata appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum Maximum Mean Median SD	5.789 0.529 0.721 0.721 0.344 Level 1.0000E-6 152 31.13 10.6 54.12 0.231 135	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL	49 2 71 6 71 27 72 70 12
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Pata appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum Maximum Mean Median SD k star	5.789 0.529 0.721 0.721 0.344 Level 1.0000E-6 152 31.13 10.6 54.12 0.231	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL	49 2 71 6 71 27 72 70 12
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Data appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum Maximum Mean Median SD k star	5.789 0.529 0.721 0.721 0.344 Level 1.0000E-6 152 31.13 10.6 54.12 0.231 135	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL 97.5% KM (Chebyshev) UCL 99% KM (Chebyshev) UCL	49 2 71 6 71 27 72 70 12 16 23
A-D Test Statistic 5% A-D Critical Value K-S Test Statistic 5% K-S Critical Value Oata appear Gamma Distributed at 5% Significance Assuming Gamma Distribution Gamma ROS Statistics using Extrapolated Data Minimum Maximum Mean Median SD k star Theta star	5.789 0.529 0.721 0.721 0.344 Level 1.0000E-6 152 31.13 10.6 54.12 0.231 135 3.228	Kaplan-Meier (KM) Method Mean SD SE of Mean 95% KM (t) UCL 95% KM (z) UCL 95% KM (jackknife) UCL 95% KM (bootstrap t) UCL 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM (Chebyshev) UCL 97.5% KM (Chebyshev) UCL 99% KM (Chebyshev) UCL	31 49 2 71 6 71 27 70 12 16 23

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

For additional insight, the user may want to consult a statistician.

VANADIUM General Statistics Number of Valid Data 7 Number of Distinct Detected Data 2 Raw Statistics Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03 Minimum Non-Detect 4.4	Number of Detected Data Number of Non-Detect Data	2 5 71.43%
Number of Valid Data 7 Number of Distinct Detected Data 2 Raw Statistics Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	Number of Detected Data Number of Non-Detect Data Percent Non-Detects Log-transformed Statistics Minimum Detected	2 5 71.43%
Number of Valid Data 7 Number of Distinct Detected Data 2 Raw Statistics Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	Number of Detected Data Number of Non-Detect Data Percent Non-Detects Log-transformed Statistics Minimum Detected	2 5 71.43%
Raw Statistics Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	Number of Non-Detect Data Percent Non-Detects Log-transformed Statistics Minimum Detected	2 5 71.43%
Raw Statistics Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	Percent Non-Detects Log-transformed Statistics Minimum Detected	5 71.43%
Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	Log-transformed Statistics Minimum Detected	71.43%
Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	Minimum Detected	
Minimum Detected 11.8 Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	Minimum Detected	
Maximum Detected 27.4 Mean of Detected 19.6 SD of Detected 11.03	entre de la companya de la companya de la companya de la companya de la companya de la companya de la companya	0 105
Mean of Detected 19.6 SD of Detected 11.03	Maximum Detected	2.468
SD of Detected 11.03	Mann of Datastad	3.311
	Mean of Detected SD of Detected	2.889 0.596
	Minimum Non-Detect	1.482
Maximum Non-Detect 7.8	Maximum Non-Detect	2.054
Maximum Non-Detect . 7.0	Maximum Non-Detect	2.034
ote: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	
or all methods (except KM, DL/2, and ROS Methods),	Number treated as Non-Betect	2
oservations < Largest ND are treated as NDs		71.43%
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However, results obtained using 4 to 9 distinct	t values may not be reliable.	
It is recommended to have 10 to 15 or more observations for action of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of th	ccurate and meaningful results and estimates.	
	ognormal Distribution Test with Detected Values Only	/
Shapiro Wilk Test Statistic N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level	Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution	Assuming Lognormal Distribution	
DL/2 Substitution Method	DL/2 Substitution Method	p.,
	Mean	1.619
Mean 7.811	SD	
Mean 7.811 SD 9.242	3U)	0.918
	95% H-Stat (DL/2) UCL	0.918 28.28
SD 9.242 95% DL/2 (t) UCL 14.6	95% H-Stat (DL/2) UCL	0.918 28.28
SD 9.242 95% DL/2 (t) UCL 14.6 Maximum Likelihood Estimate(MLE) Method N/A	95% H-Stat (DL/2) UCL Log ROS Method	
SD 9.242 95% DL/2 (t) UCL 14.6	95% H-Stat (DL/2) UCL	28.28

SD in Original Scale

95% Percentile Bootstrap UCL

95% t UCL

N/A

N/A

N/A

			B 1 / *
		95% BCA Bootstrap UCL	N/A
		95% H-UCL	N/
Gamma Distribution Test with Detected Values Or	nlv	Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A	2 da de neclesión de discentable distribution (0.00)	,
nu star	N/A		
TIU SIGN	i		
A-D Test Statistic	N/A	Nesserometris Chesteria	
5% A-D Critical Value	· · · · · · · · · · · · · · · · · · ·	Nonparametric Statistics	
	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	14
5% K-S Critical Value	N/A	SD;	5.
Data not Gamma Distributed at 5% Significance Le	vel	SE of Mean	2.
		95% KM (t) UCL	1
Assuming Gamma Distribution	en man en en en en en en en en en en en en en	95% KM (z) UCL	18
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	25
Minimum	N/A	95% KM (bootstrap t) UCL	N/
Maximum	N/A	95% KM (BCA) UCL	N//
Mean	N/A	95% KM (Percentile Bootstrap) UCL	2
Median	N/A	95% KM (Chebyshev) UCL	26
SD	N/A	97.5% KM (Chebyshev) UCL	32
k star	N/A	99% KM (Chebyshev) UCL	43
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	1
95% Gamma Approximate UCL	. N/A	95% KM (% Bootstrap) UCL	2
95% Adjusted Gamma UCL	N/A	* · · · · · · · · · · · · · · · · · · ·	
ote: DL/2 is not a recommended method.	**************************************	A CO. ANALOS SENSOREM TO SESSES SESSES SESSES SESSES SESSES SESSES	
	CL are provide	ed to help the user to select the most appropriate 95% i	UCL.
These recommendations are based upon the results	of the simulati	ed to help the user to select the most appropriate 95% to on studies summarized in Singh, Maichle, and Lee (20) want to consult a statistician.	
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Warning: Data set has only 2 Distinct Detected Values.

This may not be adequate enough to compute meaningful and reliable test statistics and estimates.

The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.

However, results obtained using 4 to 9 distinct values may not be reliable.

It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

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Normal Distribution Test with Detected Values Only	<i>i</i>	Lognormal Distribution Test with Detected Values Or	nly
Shapiro Wilk Test Statistic	N/A	Shapiro Wilk Test Statistic	N/A
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	266.5	Mean	5.529
SD	107.5	SD	0.344
95% DL/2 (t) UCL	345.5	95% H-Stat (DL/2) UCL	367.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	erer indumental i mind delentromatikan kerilani del
MLE method failed to converge properly	and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
	n norma ma mo esta mo de	SD in Original Scale	N/A
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		95% H-UCL	N/A
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A-D Test Statistic	N/A	Nonparametric Statistics	remain plane, million and a more of a co
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	, p, a rem resident
K-S Test Statistic	N/A	Mean	365.2
5% K-S Critical Value	N/A	SD	46.76
Data not Gamma Distributed at 5% Significance Levi	el	SE of Mean	24.99
	1 - 300-000 311 41	95% KM (t) UCL	413.7
Assuming Gamma Distribution	** ** * ** ** * * * * * * * * * * * *	95% KM (z) UCL	406.3
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	464.8
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	479.7

Mean	N/A	95% KM (Percentile Bootstrap) UCL	479.7
Median	N/A	95% KM (Chebyshev) UCL	474.1
SD	N/A	97.5% KM (Chebyshev) UCL	521.3
k star	N/A	99% KM (Chebyshev) UCL	613.9
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	413.7
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	479.7
95% Adjusted Gamma UCL	N/A	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	
Note: DL/2 is not a recommended method		Service of promotion accessors an accessory of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the service of the	

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL. These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006). For additional insight, the user may want to consult a statistician.

ATTACHMENT 4

SAMPLE CALCULATIONS

12IG00307 GESTION OF SOIL	
GESTION OF SOIL	
GESTION OF SOIL	
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•	
DATE:	
4/19/2011	
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PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from incidental ingestion of

surface soil (current) at UXO 32

EQUATION: $IEX = \frac{Cs \times IR \times EF \times ED \times FI \times CF}{BW \times AT}$

Where:

IEX = estimated exposure intake (mg/kg/day)
Cs = exposure point concentration in soil (mg/kg)

IR = incidental ingestion rate (mg/day)EF = exposure frequency (days/year)ED = exposure duration (years)

FI = fraction ingested from contaminated source (unitless)

CF = conversion factor (1.0E-6 kg/mg)

BW = body weight (kg) AT = averaging time (days)

CSFo = oral carcinogenic slope factor ((mg/kg/day)⁻¹) RfDo = oral noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFo (mg/kg/day)-1 HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDo (mg/kg/day)

ASSUMPTIONS:

Cs	=	114	mg/kg	Chemical: Arsenic
IR	=	330	mg/day	
EF	=	250	days/year	
ED	=	. 1	years	
Fl	=	1		
CF	=	1.0E-06	kg/mg	
BW	=	. 70	kg	
ATc	=	25550	days	
ATnc	=	365	days	
CSFo	=	1.5E+00	(mg/kg/da	y) ⁻¹
RfDo	=	3.0E-04	(mg/kg/da	v)

CALCULATION WORKSHEET

Page 2 of 2

CLIENT:		JOB NUMBER:	·	
UXO 32, INDIAN HEAD, MARYLAI	RYLAND 112IG00307			
SUBJECT:		<u> </u>		
CALCULATION OF INTAKE/RISK	FROM INCIDENTAL I	NGESTION OF SOIL		
CURRENT/FUTURE CONSTRUCTION WORKERS				
BASED ON:				
U.S. EPA, DECEMBER 1989				
BY:	CHECKED BY:	DATE:	-	
L.GANSER	Chan	4/19/2011		

EXAMPLE CARCINOGENIC CALCULATION

IEXc = 114 mg/kg x 330 mg/day x 250 days/year x 1 years x 1 x 1.0E-06 kg/mg
70 kg x 25550 days

IEXc = 5.26E-06 mg/kg/day

ILCR = 5.26E-06 mg/kg/day x 1.50E+00 (mg/kg/day)-1 = Incremental Lifetime Cancer Risk

ILCR = 7.9E-06

EXAMPLE NONCARCINOGENIC CALCULATION

IEXnc = 114 mg/kg x 330 mg/day x 250 days/year x 1 years x 1 x 1.0E-06 kg/mg
70 kg x 365 days

IEXnc = 3.68E-04 mg/kg/day

HQ = 3.68E-04 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotient

HQ = 1.2E+00

CALCULATION WORKSHEET

Page 1 of 2

CLIENT:		JOB NUMBER:	
UXO 32, INDIAN HEAD, MAI	RYLAND	112IG00307	
SUBJECT:			
CALCULATION OF INTAKE/	RISK FROM DERMAL CONTA	CT WITH SOIL	
CURRENT/FUTURE CONST	RUCTION WORKERS		
BASED ON:		· · · · · · · · · · · · · · · · · · ·	
U.S. EPA, JULY 2004			·
BY:	CHECKED BY;	DATE:	
L.GANSER	Rhai	4/19/2011	
— · · · · · · · · · · · · · · · · · · ·	7/		

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from dermal contact with surface soil (current) at UXO 32.

DEX = Cs x CF x SA x AF x ABS x EV x EF x ED

BW x AT

Where:

DEX = estimated exposure intake (mg/kg/day)
Cs = exposure point concentration in soil (mg/kg)

CF = conversion factor (1.0E-6 kg/mg)

SA = skin surface available for contact (cm²/day)

ABS = absorption factor (unitless)

AF = adherence factor (mg/cm²-event)

EV = event frequency (events/day)

EF = exposure frequency (days/year)

ED = exposure duration (years)

BW = body weight (kg) AT = averaging time (days)

CSFd = dermal carcinogenic slope factor ((mg/kg/day)⁻¹) RfDd = dermal noncarcinogenic reference dose (mg/kg/day)

RISKS:

ILCR (Carcinogens) = Intake (mg/kg/day) x CSFd (mg/kg/day)-1 HQ (Noncarcinogens) = Intake (mg/kg/day) / RFDd (mg/kg/day)

ASSUMPTIONS:

Cs	=	114	mg/kg	Chemical: Arsenic
CF	=	1.0E-06	kg/mg	
SA	=	3300	cm²/day	
AF	=	0.3	mg/cm ² -e	vent
ABS	=	0.03		
EV	=	1	event/day	
EF	=	250	days/year	
ED	=	1	years	
BW	=	70	kg	
ATc	=	25550	days	
ATnc	=	365	days	
CSFd	=	1.5E+00	(mg/kg/da	y) ⁻¹
RfDd	=	3.0E-04	(mg/kg/da	y)

CLIENT	Γ:	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	JOB NUMBER:
11		DIAN HEAD, MARYLAND	112IG00307
SUBJE			1772.00000
CALCU	LAT	ON OF INTAKE/RISK FROM DERMAL CONTAC	T WITH SOIL
		FUTURE CONSTRUCTION WORKERS	
BASED			
·	PA, J	ULY 2004	
BY:		CHECKED BY:	DATE:
L.GANS	SEK.	Kypin	4/19/2011
EVAMO		CARCINOGENIC CALCULATION	
LAAM	LL. (CANCINOGENIC CALCULATION	
DEXc	=	114 mg/kg x 1.0E-06 kg/mg x 3300 cm2/day x 0.3 mg/cm	2-event v 0.03 v 1 event/day v 250 daye/year v 1 years
		70 kg x 25550 da	
		,	,-
DEXc	=	4.73E-07 mg/kg/day	
ILCR	=	$4.73E-07 \text{ mg/kg/day} \times 1.50E+00 \text{ (mg/kg/day)-1} = Incrementation$	l Lifetime Cancer Risk
ILCR	=	7.1E-07 V	
FYAMDI	I E A	IONCARCINOGENIC CALCULATION	
-AAIIII		IONOAHOMOGENIC CAECOLATION	
DEXnc	=	114 mg/kg x 1.0E-06 kg/mg x 3300 cm2/day x 0.3 mg/cm	2-event x 0.03 x 1 event/day x 250 days/year x 1 years
-		70 kg x 365 days	
		To high cool days	
DEXnc	=	3.31E-05 mg/kg/day 🗸	
HQ	=	3.31E-05 mg/kg/day / 3.00E-04 (mg/kg/day) = Hazard Quotie	nt .
HQ	=	1.1E-01	

CLIENT:		JOB NUMBER:
UXO 32, INDIAN HEAD, MAR	YLAND	112IG00307
SUBJECT:		
CALCULATION OF INTAKE/F	RISK FROM INHALATION OF F	UGITIVE DUST EMISSIONS
CONSTRUCTION WORKERS	3	
BASED ON:		*****
USEPA, JANUARY 2009		
BY:	CHECKED, BY:	DATE:
L.GANSER	(high	4/19/2011

PURPOSE: To estimate intake, carcinogenic and noncarcinogenic risks from inhalation of surface soil (current) at UXO 32.

EC = $\frac{\text{Ca x ET x EF x ED}}{\text{AT x 24 hours/day}}$

Where:

EC = exposure concentration (mg/m³)

Ca = exposure point concentration in air (mg/m^3)

= Cs x 1/PEF

Cs = exposure point concentration in soil (mg/kg)

PEF = particulate emission factor (m^3/kg)

ET = exposure time (hrs/day)

EF = exposure frequency (days/year) ED = exposure duration (years)

AT = exposure duration (years)
= averaging time (hours)

IURi = inhalation unit risk $((ug/m^3)^{-1})$

RfCi = inhalation reference concentration (mg/m³)

RISKS:

ILCR (Carcinogens) = Exposure Concentration (mg/m³) x IURi (ug/m³) x 1000 ug/mg HQ (Noncarcinogens) = Exposure Concentration (mg/m³) / RfCi (mg/m³)

ASSUMPTIONS:

Cs 114 mg/kg Chemical: Arsenic PEF 1.43E+06 m3/kg 7.97E-05 mg/m3 2 Ca = ET 8 hours EF 250 days/year ED 1 years ATc 25550 days ATnc 365 days = 4.3E-03 (ug/m3)⁻¹ **IURi** RfCi 1.5E-05 (mg/m3)

CLIENT:		JOB NUMBER:		
UXO 32, INDIAN HEAD, MARYLAND 112IG00307				
SUBJECT:				
CALCULATION OF INTAKE/RISK FROM INHALATION OF FUGITIVE DUST EMISSIONS				
CONSTRUCTION WORKER	CONSTRUCTION WORKERS			
BASED ON:				
USEPA, JANUARY 2009	USEPA, JANUARY 2009			
BY:	CHECKED BY/	DATE:		
L.GANSER	Klori	4/19/2011		

EXAMPLE CARCINOGENIC CALCULATION

ECc = 7.97E-05 mg/m3 x 8 hours x 250 days/year x 1 years
25550 days x 24 hours/day

ECc = 2.60E-07 mg/m3 x 4.30E-03 (ug/m3)-1 x 1000 ug/mg = Incremental Lifetime Cancer Risk

ILCR = 1.1E-06

EXAMPLE NONCARCINOGENIC CALCULATION

ECnc = 7.97E-05 mg/m3 x 8 hours x 250 days/year x 1 years
365 days x 24 hours/day

ECnc = 1.82E-05 mg/m3

HQ = 1.82E-05 mg/m3 / 1.50E-05 (mg/m3) = Hazard Quotient

HQ 1.2E+00

duration (km)
* Assumes a 0.5 acre site

CLIENT:
UXO 32, INDIAN HEAD, MARYLAND
112IG00307

SUBJECT:
CALCULATION OF PARTICUALATE EMISSION FACTOR FOR CONSTRUCTION WORKERS

BASED ON:
Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites (USEPA, December 2002)
BY:
CHECKED BY:
DATE:
L.GANSER

Equation 5-5
Derivation of the Particulate Emission Factor
Construction Scenario - Construction Worker

$$PEF_{sc} = Q/C_{sr} \times \frac{1}{F_{p}} \times \boxed{\frac{T \times A_{R}}{556 \times (W/3)^{0.4} \times \frac{(365d/yr - p)}{365d/yr} \times \Sigma VKT}}$$

Parameter/Definition (units) Default PEF_{sp}/subchronic road particulate emission factor (m³/kg) site-specific Q/C_c/ inverse of the ratio of the 1-h geometric mean air 23.02° concentration to the emission flux along a straight road (Equation 5-6) segment bisecting a square site (g/m²-s per kg/m²) F_o/dispersion correction factor (unitless) 0.185(Appendix E) T/total time over which construction occurs (s) site-specific A_s/surface area of contaminated road segment (m²) 274.213 $(A_g = L_g \times W_g \times 0.092903m^2/ft^2)$ L_s/length of road segment (ft) W_n/width of road segment (ft) W/mean vehicle weight (tons) site-specific p/number of days with at least 0.01 inches of precipitation site-specific (days/year) (Exhibit 5-2) ΣVKT/sum of fleet vehicle kilometers traveled during the exposure site-specific

Calculation of PEF for Construction Workers

Q/C 23.02 (g/m²-s per kg/m³) Fd 0.185 dispersion correction factor (unitless) 7.20E+06 sec 3600 sec/hr x 8hr/day x 250 days/yr 274.213 m² Area (A) W 8 tons 140 day/year **VKT** 337.5 km 4 30 vehicles x 0.045 km/day x 250 days 1.43E+06 m³/kg PEF =

ATTACHMENT 5

LEAD MODELING RESULTS



LEAD MODEL FOR WINDOWS Version 1.1

Model Version: 1.1 Build11
User Name:
Date:
Site Name: Ux0 3 >
Operable Unit: Surface soil ((urrent) = 65 mg/kg
Run Mode: Research

***** Air *****

Indoor Air Pb Concentration: 30.000 percent of outdoor. Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m³/day)	Lung Absorption (%)	Outdoor Air n Pb Conc (µg Pb/m³)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)		
.5-1	2.260		
1-2	1.960		
2-3	2.130		
3-4	2.040		
4-5	1.950		
5-6	2.050		
6-7	2.220		

****** Drinking Water *****

Water Consumption:

Age	Water (L/day)	
.5-1	0.200	
1-2	0.500	
2-3	0.520	
3-4	0.530	
4-5	0.550	
5-6	0.580	
6-7	0.590	

Drinking Water Concentration: 4.000 µg Pb/L

***** Soil & Dust *****

Multiple Source Analysis Used

Average multiple source concentration: 55.500 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700

Outdoor airborne lead to indoor household dust lead concentration: 100.000

Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (μg Pb/g)
.5-1	65.000	55.500
1-2	65.000	55.500
2-3	65.000	55.500
3-4	65.000	55.500
4-5	65.000	55.500
5-6	65.000	55.500
6-7	65.000	55.500

***** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

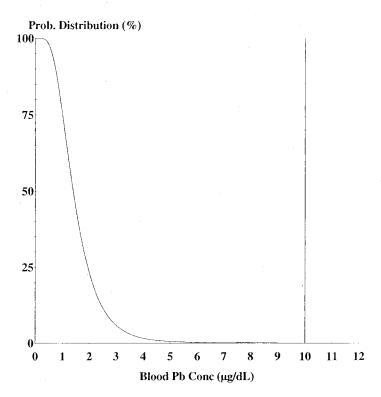
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.093	0.000	0.387
1-2	0.034	0.944	0.000	0.964
2-3	0.062	1.031	0.000	1.007
3-4	0.067	0.992	0.000	1.031
4-5	0.067	0.955	0.000	1.078
5-6	0.093	1.007	0.000	1.139
6-7	0.093	1.092	0.000	1.161
Year	Soil+Dust	Total	Blood	

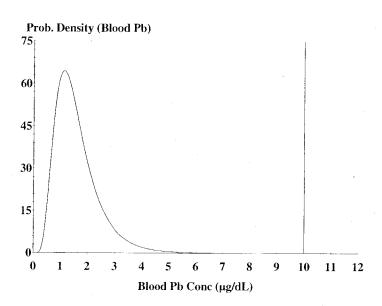
Year	Soil+Dust	Total	Blood
	(µg/day)	(µg/day)	(µg/dL)
.5-1	1.474	2.975	1.6
1-2	2.333	4.276	1.8
2-3	2.344	4.444	1.7
3-4	2.355	4.445	1.6
4-5	1.757	3.856	1.4
5-6	1.585	3.824	1.2
6-7	1.499	3.845	1.1



Cutoff = 10.000 µg/dl Geo Mean = 1.468 GSD = 1.600 % Above = 0.002

Age Range = 0 to 84 months

Run Mode = Research Comment = surface soil current 65 mg/kg



Cutoff = 10.000 µg/dl Geo Mean = 1.468 GSD = 1.600 % Above = 0.002

% Below = 99.998

Age Range = 0 to 84 months

Run Mode = Research Comment = surface soil current 65 mg/kg

LEAD MODEL FOR WINDOWS Version 1.1

Model Version: 1.1 Build11
User Name:
Date:
Site Name: $0 \times 0 \times 3 \times 2$ Operable Unit: $0 \times 1 \times 3 \times 2$ Operable Unit: $0 \times 1 \times 3 \times 2$ Run Mode: Research

***** Air *****

Indoor Air Pb Concentration: 30.000 percent of outdoor. Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m³/day)	Lung Absorption (%)	Outdoor Air n Pb Conc (µg Pb/m³)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

****** Drinking Water *****

Water Consumption:

Water (L/day)
0.200
0.500
0.520
0.530
0.550
0.580
0.590

Drinking Water Concentration: 4.000 µg Pb/L

***** Soil & Dust *****

Multiple Source Analysis Used

Average multiple source concentration: 1180.400 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700 Outdoor airborne lead to indoor household dust lead concentration: 100.000 Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	1672.000	1180.400
1-2	1672.000	1180.400
2-3	1672.000	1180.400
3-4	1672.000	1180.400
4-5	1672.000	1180,400
5-6	1672.000	1180.400
6-7	1672.000	1180.400

***** Alternate Intake *****

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

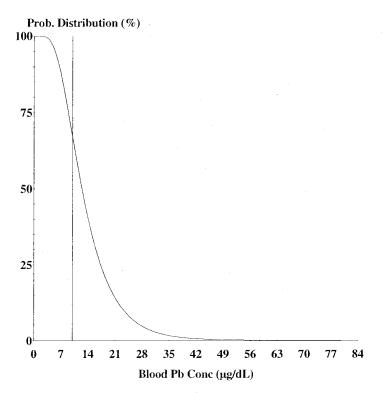
***** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Year	Air (µg/day)	Diet (μg/day)	Alternate (μg/day)	Water (µg/day)
.5-1	0.021	0.820	0.000	0.290
1-2	0.034	0.676	0.000	0.690
2-3	0.062	0.766	0.000	0.748
3-4	0.067	0.762	0.000	0.792
4-5	0.067	0.796	0.000	0.898
5-6	0.093	0.866	0.000	0.980
6-7	0.093	0.956	0.000	1.016

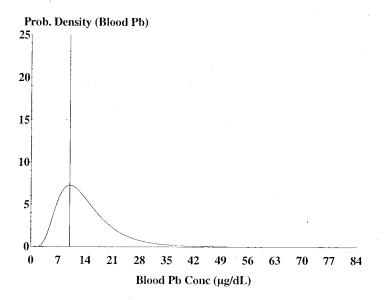
Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	25.944	27.075	14.0
1-2	39.155	40.555	16.2
2-3	40.844	42.421	15.3
3-4	42.431	44.053	14.9
4-5	34.312	36.071	12.6
5-6	31.973	33.913	10.7
6-7	30.784	32.850	9.4



Cutoff = 10.000 µg/dl Geo Mean = 13.019 GSD = 1.600 % Above = 71.273

Age Range = 0 to 84 months

Run Mode = Research Comment = surface soil capped 1672 mg/kg



Cutoff = 10.000 µg/dl Geo Mean = 13.019 GSD = 1.600

% Above = 71.273

% Below = 28.727

Age Range = 0 to 84 months

Run Mode = Research Comment = surface soil capped 1672 mg/kg

LEAD MODEL FOR WINDOWS Version 1.1

Model Version: 1.1 Build11

User Name:

Date:

Site Name: VXO 3 2

Surface soil (fature): 503 mg/kg Operable Unit:

Run Mode: Research

***** Air *****

Indoor Air Pb Concentration: 30.000 percent of outdoor.

Other Air Parameters:

Time Outdoors	Ventilation Rate	Lung Absorption	Outdoor Air Pb Conc
(hours)	(m³/day)	(%)	(µg Pb/m³)
1.000	2.000	32.000	0.100
2.000	3.000	32.000	0.100
3.000	5.000	32.000	0.100
4.000	5.000	32.000	0.100
4.000	5.000	32.000	0.100
4.000	7.000	32.000	0.100
4.000	7.000	32.000	0.100
	Outdoors (hours) 1.000 2.000 3.000 4.000 4.000 4.000	Outdoors (hours) Rate (m³/day) 1.000 2.000 2.000 3.000 3.000 5.000 4.000 5.000 4.000 7.000	Outdoors (hours) Rate (m³/day) Absorption (%) 1.000 2.000 32.000 2.000 3.000 32.000 3.000 5.000 32.000 4.000 5.000 32.000 4.000 5.000 32.000 4.000 7.000 32.000

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050

****** Drinking Water ******

Water Consumption:

2.220

6-7

Age	Age Water (L/day)			
.5-1	0.200	_		
1-2	0.500			
2-3	0.520			
3-4	0.530			
4-5	0.550			
5-6	0.580			
6-7	0.590			

Drinking Water Concentration: 4.000 µg Pb/L

***** Soil & Dust *****

Multiple Source Analysis Used

Average multiple source concentration: 362.100 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700 Outdoor airborne lead to indoor household dust lead concentration: 100.000 Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	503.000	362.100
1-2	503.000	362.100
2-3	503.000	362.100
3-4	503.000	362.100
4-5	503.000	362.100
5-6	503.000	362.100
6-7	503.000	362.100

***** Alternate Intake *****

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

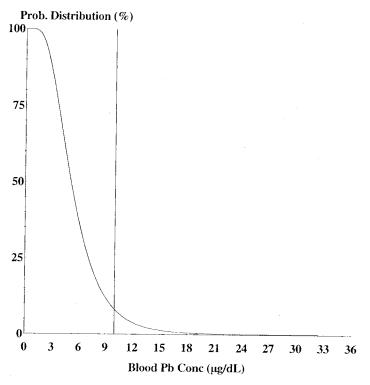
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

CALCULATED BLOOD LEAD AND LEAD UPTAKES:

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	0.996	0.000	0.353
1-2	0.034	0.845	0.000	0.863
2-3	0.062	0.937	0.000	0.915
3-4	0.067	0.913	0.000	0.948
4-5	0.067	0.904	0.000	1.020
5-6	0.093	0.963	0.000	1.090
6-7	0.093	1.050	0.000	1.116

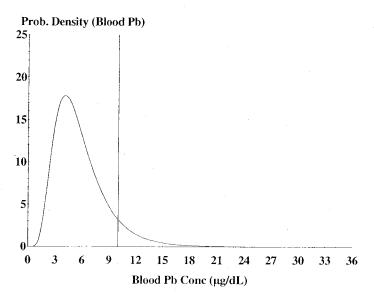
Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	9.567	10.937	5.9
1-2	14.866	16.608	6.8
2-3	15.156	17.069	6.3
3-4	15.420	17.348	6.0
4-5	11.833	13.823	5.0
5-6	10.791	12.936	4.1
6-7	10.264	12.523	3.6



Cutoff = 10.000 µg/dl Geo Mean = 5.305 GSD = 1.600 % Above = 8.871

Age Range = θ to 84 months

Run Mode = Research Comment = surface soil future 503 mg/kg



Cutoff = 10.000 µg/dl Geo Mean = 5.305 GSD = 1.600 % Above = 8.871 % Below = 91.129

Age Range = 0 to 84 months

Run Mode = Research Comment = surface soil future 503 mg/kg



Surface soil (current) UXO 32 Indian Head, Maryland Receptor: Construction Worker

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	. Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	65
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	Geometric standard deviation PbB		1.8
PbB_0	Baseline PbB	ug/dl_	1.0
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.1
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
W_{S}	Weighting factor; fraction of IR _{s+D} ingested as outdoor soil		
K_{SD}	Mass fraction of soil in dust		
$AF_{S,D}$	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	219
$AT_{S,D}$	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	1.2
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	ug/dL	2.8
PbB _t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dl_	10.0
$P(PbB_{fetal} > PbB_t)$	Probability that fetal PbB > PbB, assuming lognormal distribution	%	0.007%

Surface soil (under cap) UXO 32 Indian Head, Maryland Receptor: Construction Worker

Calculations of Blood Lead Concentrations (PbBs)

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 6/21/09

EDIT RED CELLS

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	1672
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dl. per ug/day	0.4
GSD _i	Geometric standard deviation PbB		1.8
PbB ₀	Baseline PbB	ug/dL	1.0
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.1
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
W_S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust		
$AF_{S, D}$	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{aduit}	PbB of adult worker, geometric mean	ug/dL	5.8
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	ug/dl.	13.8
PbB,	Target PbB level of concern (e.g., 10 ug/dL)	ug/dl.	10.0
$(PbB_{fetal} > PbB_t)$	Probability that fetal PbB > PbB _t , assuming lognormal distribution	%	13.534%

Surface soil (future) UXO 32 Indian Head, Maryland Receptor: Construction Worker

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	503
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	Geometric standard deviation PbB		1.8
PbB_0	Baseline PbB	սջ/վե	1.0
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.1
IR_{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
W_{S}	Weighting factor: fraction of IR _{S+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust	-	
AF _{S, D}	Absorption fraction (same for soil and dust)		0.12
$EF_{S,D}$	Exposure frequency (same for soil and dust)	days/yr	219
AT _{S. D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	2.4
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	ոճ/գլ	5.8
PbB _t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dl.	10.0
$P(PbB_{fetal} > PbB_t)$	Probability that fetal PbB > PbB, assuming lognormal distribution	%	0.504%

Surface soil (current) UXO 32 Indian Head, Maryland Receptor: Industrial Worker

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	65
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD _i	Geometric standard deviation PbB		1.8
PbB ₀	Baseline PbB	ug/dl,	1.0
IR _s	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.1
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
W_{S}	Weighting factor: fraction of IR _{S+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust		
$AF_{S,D}$	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	1.1
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	ug/dl.	2.6
PbB,	Target PbB level of concern (e.g., 10) ug/dL)	ug/dL	10.0
$P(PbB_{fetal} > PbB_t)$	Probability that fetal PbB > PbB, assuming lognormal distribution	%	0.004%

Surface soil (under cap) UXO 32

Indian Head, Maryland Receptor: Industrial Worker

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	1672
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD _i	Geometric standard deviation PbB		1.8
PbB ₀	Baseline PbB	ug/dL	1.0
IR _s	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.1
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
\mathbf{w}_{s}	Weighting factor; fraction of IR _{s+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust		
AF _{S, D}	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	219
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	3.4
PbB _{fetal. 0.95}	95th percentile PbB among fetuses of adult workers	ug/dL	8.1
PbB _t	Target PhB level of concern (e.g., 10 ug/dL)	ug/dl.	10.0
$P(PbB_{fetal} > PbB_t)$	Probability that fetal PbB > PbB, assuming lognormal distribution	%	2.217%

Surface soil (future) UXO 32 Indian Head, Maryland Receptor: Industrial Worker

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	503
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dl. per ug/day	0.4
GSD _i	Geometric standard deviation PbB		1.8
PbB_0	Baseline PbB	ug/dl.	1.0
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.05
IR_{S+D}	. Total ingestion rate of outdoor soil and indoor dust	g/day	
\mathbf{W}_{S}	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust		
AF _{S. D}	Absorption fraction (same for soil and dust)		0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	219
AT _{S. D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	1.7
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	ug/dL	4.1
PbB _t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dl_	10.0
$P(PbB_{fetal} > PbB_{t})$	Probability that fetal PbB > PbB ₀ assuming lognormal distribution	%	0.076%

Surface soil (current)

UXO 32

Indian Head, Maryland

Receptor: Adult Recreational User

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	65
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD _i	Geometric standard deviation PbB		1.8
PbB_0	Baseline PhB	ug/dL	1.0
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.05
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
W_{S}	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust		
AF _{S, D}	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	52
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	1.0
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	ug/dl.	2.4
PbB_{t}	Target PbB level of concern (e.g., 10 ug/dL)	սե/գլ՝	10.0
$P(PbB_{fetal} > PbB_t)$	Probability that fetal PbB > PbB, assuming lognormal distribution	%	0.002%

Surface soil (under cap) UXO 32 Indian Head, Maryland Receptor: Adult Recreational User

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ng/g or bbm	1672
R _{feral/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD _i	Geometric standard deviation PbB		1.8
PbB ₀	Baseline PbB	ug/dT.	1.0
IR _S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.05
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
W_{S}	Weighting factor: fraction of IR _{S+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust		
AF _{S, D}	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	52
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	1.6
PbB _{fetal, 0.95}	95th percentile PhB among fetuses of adult workers	ug/dL	3.7
PbB,	Target PbB level of concern (e.g., 10 ug/dL)	ug/dI.	10.0
$P(PbB_{fetal} > PbB_1)$	Probability that fetal PbB > PbB, assuming lognormal distribution	%	0.044%

Surface soil (future) UXO 32 Indian Head, Maryland Receptor: Adult Recreational User

Calculations of Blood Lead Concentrations (PbBs)

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004
PbS	Soil lead concentration	ug/g or ppm	503
R _{fetal/maternal}	Fetal/maternal PbB ratio		0.9
BKSF	Biokinetic Slope Factor	ug/dl. per ug/day	0.4
GSD _i	Geometric standard deviation PhB		1.8
PbB ₀	Baseline PbB	ug/dL	1.0
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.05
IR _{S+D}	Total ingestion rate of outdoor soil and indoor dust	g/day	
W_S	Weighting factor; fraction of IR _{S+D} ingested as outdoor soil		
K _{SD}	Mass fraction of soil in dust		
$AF_{S,D}$	Absorption fraction (same for soil and dust)		0.12
EF _{S, D}	Exposure frequency (same for soil and dust)	days/yr	52
AT _{S, D}	Averaging time (same for soil and dust)	days/yr	365
PbB _{adult}	PbB of adult worker, geometric mean	ug/dL	1.2
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	ug/dl.	2.8
PbB _t	Target PhB level of concern (e.g., 10 ug/dl.)	ug/dl.	10.0
$P(PbB_{fetal} > PbB_t)$	Probability that fetal PbB > PbB, assuming lognormal distribution	%	0.006%